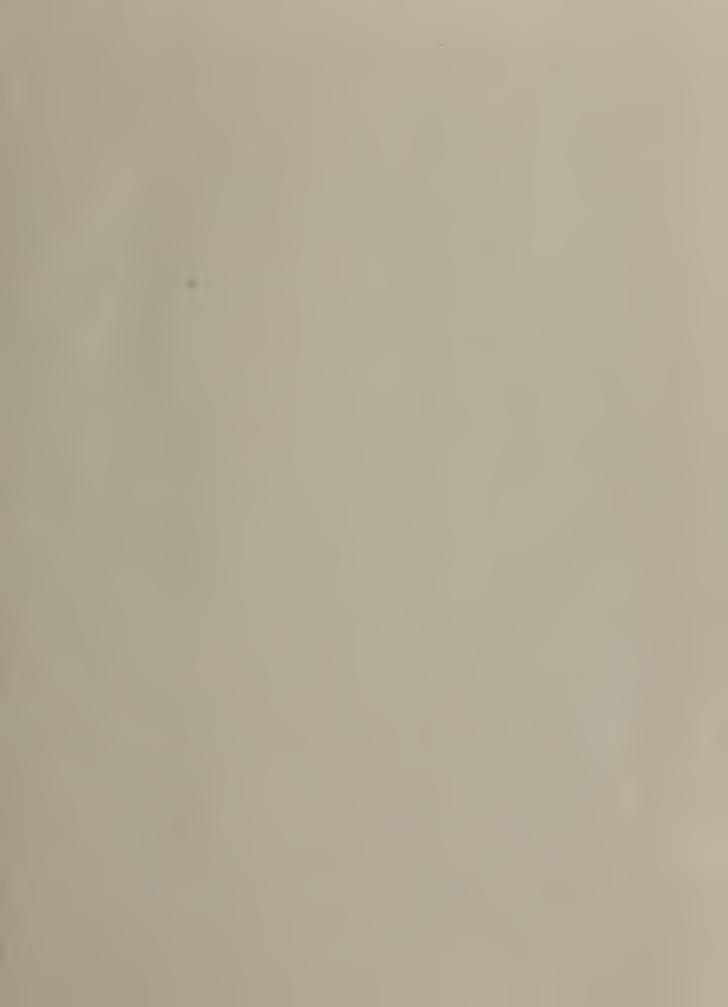
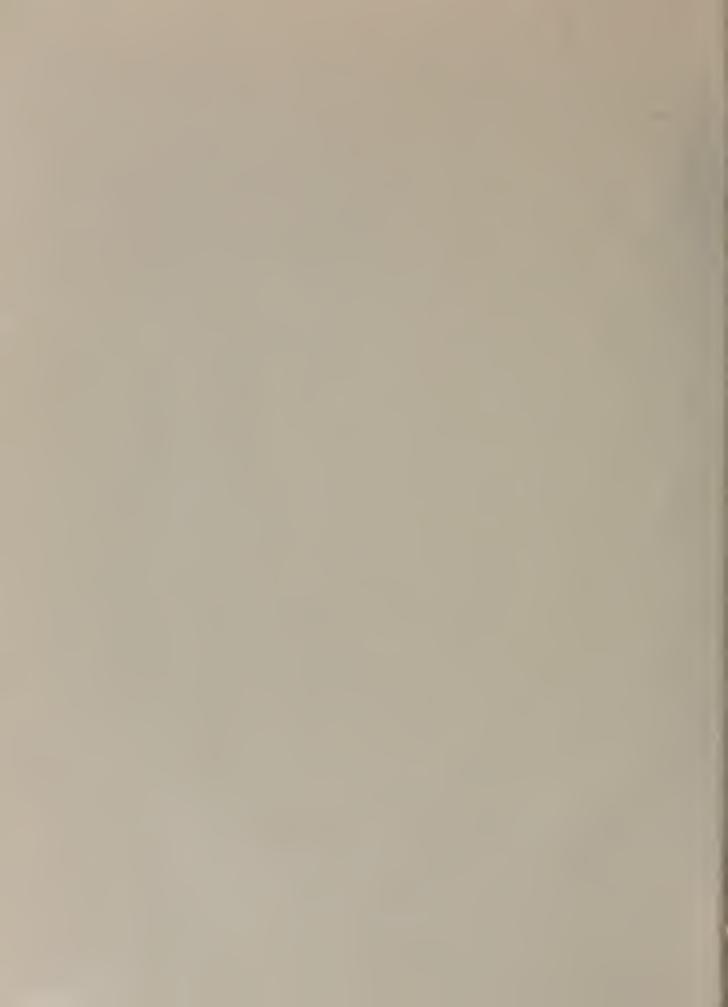


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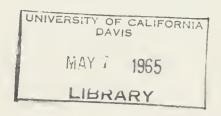


# State of California THE RESOURCES AGENCY

Department of Water Resources

BULLETIN No. 94-7

# LAND AND WATER USE IN MAD RIVER—REDWOOD CREEK HYDROGRAPHIC UNIT



**APRIL** 1965

HUGO FISHER

Administrator
The Resources Agency

EDMUND G. BROWN
Governor
State of California

WILLIAM E. WARNE

Director

Department of Water Resources



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LIBRAKY UNIVERSITY OF CALIFORNIA DAVIS Estimates of future water requirements, based on the land and water use studies and projections of foreseeable future development, are now underway in some areas. Results of these water resources and water requirements studies will be published as Bulletin No. 142 series, each covering some or all of the hydrographic units within a drainage area.

These water resources and future water requirements bulletins will provide the basis for outlining the additional projects needed to meet the State's growing water needs. By interrelating the projected water requirements of all areas of the State with the available local supplies, by decades, a recommended sequence and timing for the State's future water development plans will be established. Besides thus forming the chief basis for the Department of Water Resources' all-important project staging program, the data on water resources and water requirements will be a most valuable guide for water development planning by federal local, as well as state agencies.

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#### TMENT OF WATER RESOURCES

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State of California
In Resources Agency
IN ARTMENT OF WATER RESOURCES



PDMUND G. BROWN, Governor

10c1 , Constant of Tailly, Administrator, The Rescurces Agency
WHILIAM E. WARWE, Director, Department of Water Resources
ALFRED R. GOLZE, Chief Engineer
JOHN M. HALEY, Acting Assistant Chief Engineer

Honorable Edmund G. Brown, Governor, and Members of the Legislature of the State of California HOMARS WESHTROW

Stuart T. Pyle . . . . . . . . . . . Acting Branch Chief

I have the honor to transmit Bulletin No. 94-7, "Land and Water Use in Mad River-Redwood Creek Mydrographic Unit", which describes land use, classification of lands, and water use Within this hydrographic unit. This report is one of a series of Department of Water Resources reports Which will describe similar studies being conducted throughout the State. These studies are being conducted pursuant to legislation sponsored by Senator Edwin J. Regan and Codified under Section 232 of the Water Code.

C. Wesley York . . . . . . . . . . . . . . Senior Engineer

released, and in April 1964 its contents were discussed at a public hearing held in Eureka, California. Department personnel studies made at a public of the department personnel studies and first at this hearing and revised the present edition accordingly. Frederick E. Stumpf.

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Director

#### PLATES

Plate No.	
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State of California LEARTMENT OF WATER RUCOUNCES



FDMUND G. BROWN, Governor LOGO FLOURS, Administrator, The Resources Agency WHILIAM E. WARME, Director, Department of Water Resources ALFRED R. GOLZE, Chief Engineer JOHN M. HALEY, Acting Assistant Chief Engineer

Honorable Edmund G. Brown, Governor, and Members of the Legislature of the State of California NORTHERN BRANCH

Stuart T. Pyle . . . . . .

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vesley E. Steiner . . . . . . . . . Acting Division Engineer Meyer Framsky . . ; zruov veferonichief , Statewide Investigations pranca Willia & wann

Director

## State of California The Resources Agency DEPARTMENT OF WATER RESOURCES

EDMUND G. BROWN, Governor
HUGO FISHER, Administrator, The Resources Agency
WILLIAM E. WARNE, Director, Department of Water Resources
ALFRED R. GOLZE, Chief Engineer
JOHN M. HALEY, Acting Assistant Chief Engineer

NORTHERN BRANCH

## 

Robert E. Foley . . . . . . . . Chief, Special Investigations Section

#### assisted by

> Statewide Aspects of the Coordinated Statewide Planning Program are coordinated under the direction of the Division of Resources Planning

Wesley E. Steiner			•	٠									Ac	ting	Division	Engineer
Meyer Kramsky			•	•	•	•		Chi	lef	,	Stat	ewi	ide	Inv	estigation	s Branch
Ralph G. Allison .	•	٠		•	A	eti	ng	Chi	lef	,	Plan	mir	ng	Inve	stigations	Section

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WILLIAM H. JENNINGS, Vice Chairman, La Mesa

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MARION R. WALKER, Ventura

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WILLIAM M. CARAH Executive Secretary

ORVILLE L. ABBOTT Engineer

#### TRANSLEY COMMISSION

The Department of Water Resources gratefully acknowledges onesna , namical , Ydoha .M HAJAA information contributed by the various water users and residents of the Mad River-Redwood Creek Hydrographic Unit and agencies of the federal, state, and local governments.

Mr. John Lenz and Mr. Joseph Borden, Farm Advisors of Humboldt and Trinfty Counties respectively, for their helpful Cooperation in conducting a review of information published herein.

While most of the photographs shown in this report were taken by a photographer of the department, the department expresses its appreciation for the four photographs on pages 6 and 11 to the State Division of Highways, and for the photograph on page 73, bottom, to Eureka Newspapers, Incorporated.

WILLIAM M. CARAH Executive Secretary

ORVILLE L. ABBOTT Engineer

PUBLIC HEARING

on

Preliminary Edition

of

Bulletin No. 94-7

Land and Water Use in Mad River-Redwood Creek
Hydrographic Unit

In accordance with Section 232 of the Water Code and the Department of Water Resources' policy, a public hearing was held on April 15, 1964, to receive comments on the preliminary edition of Bulletin No. 94-7, "Land and Water Use in Mad River-Redwood Creek Hydrographic Unit". This hearing was held in the Humboldt County Courthouse, Eureka, California. Mr. Robert E. Foley, assisted by other Water Resources personnel, conducted the meeting. The hearing was attended by 15 members of the public, including local water users, representatives of state and local government agencies, and other interested parties.

The department has conducted further review of the preliminary edition and of verbal comments received at the hearing, and only minor technical and editorial revisions have been made. Copies of the transcript of the hearing are on file with the Department of Water Resources in Sacramento and are available for review by the public.

Verbal comments were made at the hearing by the following persons:

Mr. Albert King, 1705 Glatt Street, Eureka, California

Mr. Robert F. Kelly, Winzler & Kelly Construction Engineers, 730 Fifth Street, Eureka, California.

No written comments pertaining to this report were received by the Department of Water Resources.



#### CHAPTER I. INTRODUCTION

This bulletin presents basic data on land and water use in portions of Humboldt and Trinity Counties, designated as the Mad River-Redwood Creek Hydrographic Unit. The unit, which is located and outlined on Plate 1, is composed mainly of the watersheds of Mad River and Redwood Creek, but also includes the smaller watersheds of Little River, Maple Creek, and a number of lesser streams flowing directly into the Pacific Ocean. The data include descriptions of systems used to divert water from the various streams in the hydrographic unit, together with histories, apparent water rights data, and purpose and extent of use of each diversion. The data also include monthly quantities of surface water diverted, land use data, and an estimate of total consumptive use of applied water for 1958, and classification of lands in the unit as to suitability for irrigation and for potential recreational development. These data are prefaced by a general description and brief history of the hydrographic unit and immediate vicinity.

These basic data were gathered during the period from 1958 to 1959 in compliance with Chapter 61, Statutes of 1956, as amended by Chapter 2025, Statutes of 1959, and codified in Section 232 of the Water Code of the State of California. This legislation provides for an inventory of water resources and water requirements of the State. This report is the seventh of the series of bulletins to be prepared under this authorization. The text of Section 232, with a discussion of its history and implications, is included in this bulletin as Appendix A.

These data will provide the basis for determination of the quantities of water that are required for potential future uses in the hydrographic unit, the extent to which local water supplies will meet such requirements, and the amounts of water which will be available for export

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of Humboldt and Trinity Counties, designated as the Mad River-Redwood Creek.

(1) projected land use patterns, (2) economic

This bulletin presents basic data on land and water use in portions patterns, (3) population, (4) industrial and agricultural development, and of Humboldt and Trinity Counties, designated as the Mad River-Redwood Creek.

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maps prepared in connection with Chapters II and III, delineate the locations of diversion systems and the areas of various 1958 land uses.

Chapter IV includes a tabulation of lands classified with regard to their potential for irrigated agriculture and for recreational purposes.

The ll sheets of Plate 3, consisting of maps prepared for this chapter, delineate the respective classes of land grouped into several major categories. Chapter V summarizes the data presented in the report.

Appendix A presents the text of Section 232 of the California
Water Code and a discussion of the pertinent responsibilities and work
program of the Department of Water Resources. Appendix B is a bibliography
of publications pertinent to the hydrographic unit. Appendix C presents
a short summary of California Water Law and a tabulation of applications
to appropriate water in the unit.

#### General Description of Area

The Mad River-Redwood Creek Hydrographic Unit is a narrow land area approximately 90 miles long, with a maximum width of 20 miles and a minimum width of less than 5 miles. The total area of the unit is 929 square miles, of which 770 square miles lie within Humboldt County and 159 square miles lie within Trinity County. The exterior limits of the drainage basins of the Mad River and Redwood Creek virtually delineate the boundaries of the unit. The unit is bordered by the watersheds of the Klamath and Trinity Rivers on the north and east, and those of the Eel and Van Duzen Rivers and Humboldt Bay on the south. The unit boundary representing the southern limit of the Mad River watershed on the coastal plain north of Arcata, appearing on Sheet 5 of Plate 2 and Plate 3, is located along the apparent drainage line as indicated by the topography shown on the U. S. Geological Survey

Eureka quadrangle map, dated 1951, and does not necessarily coincide with delineations used in other studies covering this area.

For purposes of convenience and utility in reporting data, the unit has been subdivided into nine subunits. General locations of these subunits and that of the unit itself are shown on Plate 1. The area of each, by counties as well as by total, is listed in Table 1.

#### Historical and Present Development

The historical and present development of the Mad River-Redwood Creek Hydrographic Unit cannot be properly discussed without the concurrent consideration of the development of the entire Eureka and Humboldt Bay The history of this area, comprising all of Humboldt County and area. western Trinity County, has been greatly affected by its geographical features. At the beginning, because of the inland mountains, the two available anchorages, Trinidad and Humboldt Bays, were virtually the only routes of access. Because of its greater size and protection as a harbor, and the surrounding area suitable for continued growth, Humboldt Bay soon became the hub of activity. Near its shores, in Eureka and vicinity, the great bulk of the district's population, business, and industry has developed. The two largest communities within the boundaries of the Mad River-Redwood Creek Hydrographic Unit, Blue Lake and the unincorporated community of McKinleyville, are, in fact, extensions of the Humboldt Bay-Eureka development.

Before the coming of the white man, this area was inhabited by Indians. The tribes within the boundaries of the Mad River-Redwood Creek Hydrographic Unit were the Wiyots in the area of the lower Mad River, the Chilulas within the area of lower Redwood Creek, and the Whilkits within the area of the upper Mad River and upper Redwood Creek.

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Exploration. The adjacent Pacific Ocean provided the means for the white man's discovery of the Humboldt region. The first recorded activity in the area of the Northern California coast was that of the Spanish explorers, Juan Rodriges Cabrillo and Bartolome Ferrelo, in 1542 and 1543. These men explored the area immediately to the south of, but did not actually discover, the Humboldt region itself. Probably the first European explorer to discover the Humboldt region was the famous Sir Francis Drake, in about 1580. In 1775, the Spanish explorers, Juan Francisco de la Bodega and Bruno de Heceta, discovered Trinidad Bay, located at the southern tip of the Big Lagoon Subunit of the Mad River-Redwood Creek Hydrographic Unit. In 1806, Captain Jonathan Winship entered Humboldt Bay, which was later to become the most important center of all development in the entire area.

During the time of Captain Winship, the only economic activities in the area were carried on by fur traders of various nationalities. The discovery of gold in 1848 on the upper Trinity River was a keypoint in the history of Northwestern California. The development of mining in the Trinity region brought about the establishment of supply routes between the mining region and the Humboldt Bay area. The desire to establish a supply route to the Trinity mines brought about intensive exploration of the Humboldt coastal area.

One of the more important expeditions of the day was that led by Dr. Josiah Gregg in 1849 and 1850. Dr. Gregg's party explored the vicinities of Humboldt Bay, the Mad River, Big Lagoon, Little River, and the Eel River. Lack of harmony existed between Dr. Gregg and other members of the party; Dr. Gregg himself was said to have had a bad temper. One day when Dr. Gregg was surveying near the mouth of a river, he spied other members of his party in canoes well out into the stream. Thinking that his party was deserting him, Dr. Gregg made a quick dash for the nearest canoe by wading

deep into the cold water. The thorough soaking of himself and his instruments gave strong rise to Dr. Gregg's temper. As a result, the other members of the party were subjected to a violent battery of abusive language. One of the members later wrote, "In commemoration of this we gave the river a name." Thus the Mad River received its name.

Early Development. The year 1850 marks the beginning of the permanent settlements in the region, and several towns came into being in that year. These settlements were the Trinidad Bay settlement; Union Town, later named Arcata; Eureka, the last of the group to be established but later to become the economic center of the entire region; and Bucksport, immediately south of Eureka. Humboldt City, also situated south of Eureka, was rather short-lived. Union Town was the economic center for the period 1850-1856. The only one of these communities which is actually within the Mad River-Redwood Creek Hydrographic Unit is Trinidad.

In 1851 Trinity County, including present Humboldt County, was organized, with Weaverville winning out as county seat. In 1853 the State Legislature divided Trinity County into two parts, designating the western portion as Humboldt County. Union Town, or Union as it was more commonly called, won the first election as county seat. However, Eureka was coming into some prominence, and competition between the two towns was intense. Following a series of contested elections, Eureka finally was designated by the State Legislature as county seat in 1856. This ensured Eureka's future.

At the time of the establishment of these early settlements, the principal contribution to the economy of the region was the packing trade to the Trinity area mines. Whale, shark, and salmon fisheries were flourishing. In 1854, flour and grist mills came into existence. In 1856 it is recorded that the first McCormick reaper was placed in operation. This was

in the Hoopa Valley area on the Trinity River. Most important of all, thi queb however, was the establishment and rapid growth of the lumber industry as them in the early 1850's, mainly around Humboldt Bay. This was the start of and to the most important industry of the Humboldt region, estart of the most important industry of the Humboldt region, estart of the most important industry of the Humboldt region.

name. ' I us the Mad River received its name.

Resources and Industries. The forest products industry is the backbone of the economy of the hydrographic unit. Seventy-nine percent of the unit's gross area is covered with dense stands of redwood, Douglas fir pine gand other commercial conifers and The standing timber is estimated and to be 20 billion board feet. m is add in the sin serial setsonA beasa resal Lumber production in the Humboldt Bay area expanded rapidly after of the first mill started in 1850, and it has been reported that by 1854 nine sawmills were operating in the area. These mills were mostly in the Eureka area outside the boundaries of the Mad River-Redwood Greek Hydrographic Unit. Probably the first sawmill within the funit was that operated by Baron Karl 594 Von Loeffelholz from about 1850 to 1856, near Trinidad. The succeeding years brought additional mills to various other parts of the unit: The chasgo sales of wood products within the boundaries of the unit reached a peak along all value of 33 million dollars and 955 to Anfew years later sales (value of nolino wood products stabilized at about 29 million dollars persyears of the collection wood products. and Population growth within the Mad River-Redwood Creek Hydrographic to Unit has closely reflected the vicissitudes of the timber industry. E This offer growth was slow and somewhat spasmodic for a long period; but since 1950, 2 edt there has been a sharp increase, principally in the Humboldt coast portion. The population was about 8,100 in 1950, and had almost doubled by 1960. -63 . Worldhe present population of the unit is slightly over 16,000 per-dt of sons. The population centers are confined to the coastal plains and of the coastal plains and small valleys, where nearly all the sawmills and intensive farming are paproper located. Developed areas away from the coast are small and scattered.

The major agricultural commodities produced presently are dairy products, horticultural products, and range livestock. The first two of these are produced mainly along the coast. The total production, and consequently the relative importance, of horticultural products -- lilies and cut flowers -- has developed rapidly since 1940. In recent years, the total value of farm products has been around \$2,500,000 per year.

In earlier history the port of Trinidad was quite important in commercial fishing activities. It is still of some importance, but now handles only about one-tenth of these activities in Humboldt County; the greater part of this industry in the region now being centered at Eureka, outside the hydrographic unit.

Mineral resources are of a limited nature, with the exception of huge aggregate reserves and small commercial manganese ore deposits. Most of the output of sand and gravel in Humboldt County comes from within the EXTRIBUTION ENTIRED THE MADE AND ADDRESS OF BOOK AND

An increasingly important business, and potentially one of the greatest resources, is the recreational activity within the unit. Present recreational activity is mostly confined to the state parks along the coast. However, the rugged back country will become more and more important with the construction of additional development reservoirs, such as Ruth Reservoir.

Water development projects within the unit are the 3,000-acre-foot Sweasey Dam and Reservoir on the lower Mad River, and the newly constructed 52,000-acre-foot Ruth Dam and Reservoir on the upper Mad River. The first provides the water supply for the City of Eureka, and the second will supply the larger industrial water users around Humboldt Bay. The water developed from both of these projects is for export to the Eel River Hydrographic Unit.



Logs from the unit's forests

NATURAL RESOURCES PROVIDE INDUSTRIES



Fishing fleet in Trinidad Bay

The remainder of water development activity is confined to relatively small diverters.

#### Natural Features

Except for a relatively small coastal plain area and even smaller interior valleys, the terrain of the Mad River-Redwood Creek Hydrographic Unit is composed of steep, and for the most part, inaccessible mountains. The maximum elevation of the unit, near the headwaters of the Mad River, is about 5,000 feet.

The drainage basins of Mad River on the southwest and Redwood Creek on the northeast form the bulk of the hydrographic unit. The Mad River, starting at its source in southern Trinity County, flows almost directly northwest through western Trinity County and across central Humboldt County to the Pacific Ocean. The absence of large tributaries and of main stem forks accounts for the long, narrow drainage basin.

The gross area of the basin is approximately 500 square miles. Redwood Creek flows from its source in eastern Humboldt County and follows a course roughly parallel to that of Mad River to reach the Pacific Ocean near the northwest corner of the county. This basin is also long and narrow, and it has a gross area of about 285 square miles. The remainder of the hydrographic unit is composed of the drainage basins of smaller streams flowing directly into the Pacific Ocean between the mouths of the Mad River and Redwood Creek.

Geology. Rock types which occur in the hydrographic unit are largely sandstone, shale, conglomerate, chert, and greenstone. A large elongated body of mica schist, occurs along the drainage divide between Mad River and Redwood Creek, extending eastward to Redwood Creek in most

places a Alberthese rocks are strongly deformed by ofolding, shearing mander end faulting, and are generally deeply weathered at the surface. The predominating northwest drainage pattern is controlled by and aligned with the trends of the principal structural features and stratification of the rock units.

Tellams neve and season flams yievitaiers of the principal structural features and stratification of the rock units.

Along the coastal portion of the Mad River drainage are younger sediments, singergorich asset browben-ravis and to mismat each structural feature.

including Cenozoic marine formations, alluvium, dune sands, and terrace
.anistmos eldiseesseni, frag teem ent not be equal to be ecomposed time
deposits. The last three of these form part of a principal ground water

The maximum elevation of the unit, near the headwaters of the Mad River, basin extending southward otni Eel River Hydrographic Unit.

is about 7.000 feet

processes: e(1) those formed in place on more or dessemetamor phosed sand-year stones, shales, conglomerates or intruded igneous rock; and (2) those formed from transported (alluvial) soil material originating from these formet rocks for the first group can be affurther segregated into two categories. Those which were formed from etropesto cover, and those of ormed funder grass to be cover. The soils formed from alluvial material can be segregated as those entry formed which lietalong existing etrems and rivers tand those of degrator terrace soils formed from objected materials of lellarsy those of degrators are coursed to the soils of ormed from the soils of ormed which lietalong to be settled materials of lellarsy those of the course of the soils of ormed from t

near this are this are the soil of the graph of the graph

the grassland soils (also called prairierg eliografierd from corrections) and the encorrections of the surface and solidated rock are reddish-brown to dark brownsh gray near the surface and Geology. Rock types which occur in the hydrographic unit are yellow to yellowish-brown in the subsoil. They usually are found to be largely sandstone, shale, conglomerate, chert, and greenstone. A large hour sayols along the forest covered soils, accurs or unically services along the drainage divide as rounded hilltops.

Mad River and Redwood Creek, extending eastward to Redwood Creek in most

from grayish-brown to brownish-gray; and commonly have medium soil texture.

Generally, little profile development can be seen. In many cases these is soils are subject to frequent flooding or high water table conditions.

primarily from ocean deposited usoil omaterial at that has been uplifted sorthat add the present velief sonsists of was series of well vely smooth to gently sloping terraces to The soil texture and estrong fine, sandy alount to silty floam if The as surface is usually a reddish brown color with the subsoil yellowish brown. Of Drainage is good, although the subsoil is of as somewhat heavier texture than a the surface. In most cases these wolls have, or had at one time, a forest cover. To make the subsoil state to solve the surface when a surface the most cases these wolls have, or had at one time, a forest cover. To make the subsoil surface the most cases these wolls have, and had at one time, a forest cover. To make the subsoil surface the most cases the service that we had at one time, a forest cover. To make the subsoil surface the most subsoil surface when the subsoil and the subsoil surface when the subsoil surface we had at one time, a forest cover. To make the subsoil surface when the subsoil surface we had at one time, a forest cover. To make the subsoil surface when the subsoil surface we had at one time and the subsoil surface when the subsoil surface we had at one time and the subsoil surface when the subsoil surface we had a surface when the subsoil subsoil surface we had a surface with subsoil subsoil

sajaceru to the Mad Miver-Record Creek Hydroglappic Unit are snown in <a href="mailto:statute.com">statute.com</a> The extremes shown are the highest and lowest seasonal precipi-

The climate of the Mad River-Redwood Creek Hydrographic Unit varies on the climate of the Mad River-Redwood Creek Hydrographic Unit varies tation observed during the period of record indicated for the cases across typical of the Northern California coast to the Except for the recorded quantit; shown for the Eureka Weather Buresa

-ni radge and generally more extreme seasons common to the higher in-Station, the 50-year mean seasonal ralues are estimates of the average

land areas. In the lower part of the unit, extending some 25 to 30 miles depth of rainfall which would have been observed at these stations if they

effect on the climate of the coastal area. The more inland part of the -request edt yd bestratelli ytlorenes, it sim out to est the edt unit is enough removed from the oceanic influence, both by elevation and

ature data presented in a le 3. . . . . data, with the exception and ature data presented in a le 3. . . . . . data, with the exception of the yellowing entered the intervening ridges, to be comparatively free of the moderating effect entered of the course, being the chinatic Summary of the entered of the period rature.

of the marine air mass. This inland area is subject to a wider range of Unit . States - Supplement or Los to rook 1962, Rulletin V, published temperature variation, both daily and seasonal, and a more variable distri-

bution of precipitation than the coastal area.

derived to be artment of Water esources, with present the average

Average annual precipitation within the unit varies from about 40 inches per year near the mouth of the Mad River to about 90 inches per year in the vicinity of Board Camp Mountain. Over 80 percent of the season's precipitation occurs between November 1 and April 30. In the coastal area, there is generally a measurable amount of precipitation in every month of the year. In the inland part, precipitation usually occurs in all months except July or August, which often have no measurable rainfall. Average snowfall within the unit varies from a negligible amount along the coast to over 4 feet per year at Mad River Ranger Station. The average lowest elevation at which there is snow on the ground on April 1 is about 4,000 feet.

Maximum and minimum recorded seasonal precipitation and estimates of 50-year mean seasonal precipitation at selected stations within or adjacent to the Mad River-Redwood Creek Hydrographic Unit are shown in Table 2. The extremes shown are the highest and lowest seasonal precipitation observed during the period of record indicated for each station. Except for the recorded quantity shown for the Eureka Weather Bureau Station, the 50-year mean seasonal values are estimates of the average depth of rainfall which would have been observed at these stations if they had been in existence during the base period 1905-06 to 1954-55. It is considered that these mean values are representative of the long-term mean seasonal precipitation of the unit.

The climate of the unit is generally illustrated by the temperature data presented in Table 3. These data, with the exception of the frost-free period values, were taken from the "Climatic Summary of the United States -- Supplement for 1931 through 1952," Bulletin W, published by the U. S. Weather Bureau. The values for the frost-free period were derived by the Department of Water Resources, and represent the average

TABLE 2

RECORDED EXTREME AND ESTIMATED MEAN
ANNUAL PRECIPITATION AT SELECTED STATIONS
IN OR NEAR MAD RIVER-REDWOOD CREEK
HYDROGRAPHIC UNIT
(In inches)

	:		al precipita	ation	4
Station	: Elevation : (in feet) :		: Recorded : minimum :	: Estimated : 50-year : mean	: Years of : record : used
Alderpoint	435	80.38 (1957-58)	33.84 (1943-44)	47.07	1941 - 1960
China Flat	650	71.32 (1926-27)	22.55 (1923-24)	46.15	1909 - 1954
Crannell	150	77.51 (1937-38)	29.69 (1933-34)	51.96	1933 - 1948
Eureka	43	74.10 (1889-90)	20.72 (1923-24)	36.66	1879 - 1960
Forest Glen	2,340	102.46 (1957-58)	36.59 (1930-31)	57.73	1930 - 1960
Korbel	180	79.96 (1937-38)	36.18 (1946-47)	51.50	1937 - 1960
Mad River Ranger Station	2,775	97.81 (1957-58)	39•35 (1954 <b>-</b> 55)	55.15	1944 - 1960
Orick - Prairie Creek Park	161	92.88 (1955-56)	46.33 (1946-47)	65.43	1937 - 1960

period between the last day in spring and the first day in the fall when the daily minimum temperature fell to or below 32 degrees Fahrenheit.

TABLE 3

TEMPERATURE DATA AT SELECTED STATIONS
IN OR NEAR MAD RIVER-REDWOOD CREEK
HYDROGRAPHIC UNIT
(In degrees Fahrenheit)

Station	: :Elevation	. A	verage		Extr	eme	: Average : daily	: Frost- : free : period
	:(in feet)	:Jan.	:July	:Annual	High	:Low	:variation	:(in days)
Alderpoint	435	43.9	72.7	58.2	112	16	28.4	202
China Flat	650	41.7	72.7	56.6	113	9	26.3	247
Eureka	43	47.0	55.6	51.6	85	20	10.8	318
Forest Glen	2,340	36.9	68.3	51.6	107	<del>-</del> 2	31.7	141
Orick-Prairie Creek Park	161	42.8	59.6	51.9	95	19	18.1	21.3
Orleans	403	41.5	72.3	56.8	113	14	29.0	222

## Water Resources

With the drainage basins of Mad River and Redwood Creek comprising the bulk of the hydrographic unit, the runoff records for these streams provide the basis for a general picture of the unit's surface water supply. There is a gaging station on the lower reaches of each of these streams. The periods of record are relatively short but sufficiently long to present an indication of the supply. A summary of data from these two stations is given in Table 4. For the period June 1 through September 30, 1958, the observed runoff at the Mad River station was 96 percent of the average, and that at the Redwood Creek station, 77 percent.

TABLE 4

SUMMARY OF RUNOFF DATA
MAD RIVER AND REDWOOD CREEK

Item	Mad	River near A	rcata	Redwoo	od Creek at	Orick
Drainage area: (in square miles)		485			278	
Years of record		13			9	
	Average	Maximum	Minimum	Average	Maximum	Minimum
Runoff: (in acre-feet)	1		(00,000	55) (00	2 25 000	500,000
Seasonal	1,140,000	1,721,000	682,900	774,600	1,174,000	533,200
Monthly	95,000	574,000	1,080	64,500	371,400	972
Discharge: (in cubic feet per second)	1,575	77,800	16	1,070	50,000	10

### Local Public Agencies Concerned with Water Development

A number of local public agencies are engaged in water development or related fields within the Mad River-Redwood Creek Hydrographic Unit. Most of these are water service agencies organized to serve domestic and industrial consumers. Among these are three incorporated cities: Elue Lake and Trinidad within the unit; and Eureka, located in the Eel River Hydrographic Unit. The water for these three cities' systems is supplied from surface diversions within the unit. The largest water development agency in and adjacent to the unit is the Humboldt Bay Municipal Water District, which includes portions of both the Eel River and Mad River-Redwood Creek Hydrographic Units. The district's Ruth Dam had not been built in 1958 when diversion data were collected for this report, and hence it is not included.

In addition to these water service agencies, both Humboldt and Trinity Counties, as members of the Eel River Flood Control and Water Conservation Association, participate in the study of water problems of the general area. Humboldt County, acting principally through its Water Study Committee, is particularly concerned with studies directly pertaining to this unit.

### CHAPTER II. WATER USE

Present water requirements of the Mad River-Redwood Creek Hydrographic Unit are supplied about 40 percent by diversion of surface runoff, and about 60 percent by pumping of ground water. For this investigation a survey was made of the diversion and use of the water from surface sources. Survey data reported herein include the location and descriptions of diversion systems, their histories, the uses served by them, and the apparent water rights on which they are based. The criterion for inclusion of individual diversions in this report is whether they apparently divert 10 acre-feet or more per year, regardless of the purpose served. Small diversions omitted on this basis were mainly ones which serve only one or a few domestic users.

Quantities of water diverted were measured, where feasible, to provide additional basic data concerning water use which will be helpful in determining water requirements of the unit. A total of 68 diversions were studied, of which 65 were active in 1958; and the quantities diverted at 40 of these 65 were measured. A summary of the diversions classified as to purposes served is given in Table 5. The measured quantities do not necessarily represent average annual quantities for the respective diversions. Rainfall in the unit in 1958 was above normal through April and about normal thereafter. Causes other than weather and runoff conditions, such as economic factors, may also affect the degree to which diversion records represent typical yearly operating practices. Assessment of these factors is beyond the scope of this report. It appears unlikely, however, that water use in the unit was significantly above or below normal. The diversion quantities reported herein generally represent the actual amounts of water taken from the sources, and therefore include recoverable and irrecoverable losses incidental to the water use.

TABLE 5

## SUMMARY OF USE AND MEASUREMENT OF SURFACE WATER DIVERSIONS IN MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

(In 1958)

Numbers o	of diversions :	:		nt of diversions
Total number	: Diversions used: in 1958 :	Major purposes :	Number of diversions measured	
<i>l</i> +1+ <del>×</del>	42*	Irrigation and/or stockwatering	32	1,341
8	8	Municipal and/or domestic	2	55
10	10	Industrial	3	197
14	3	Hydroelectric power	2	495
1	1	Recreation and/or fish culture	0	0
1	<u>1</u>	Export to Eureka	1	3,866
68*	65*	TOTALS	40	5,954

<sup>\*</sup> Includes two diversions from which some of the water diverted is exported from the unit.

Blue Lake, Crannell, Trinidad, and several other small communities within the unit are supplied from surface water diversions. The Blue Lake and Trinidad systems are municipally owned. Water is also exported from the unit for the City of Eureka from its Sweasey Dam diversion on Mad River. All of the municipal diversions, as well as those for other purposes in existence in 1958, are included in the tabulations in this chapter.

Since a sufficiently accurate estimate of ground water use may be made from unit water use requirements and complete land use data, it was not considered justifiable in this investigation to locate water wells and measure



MUNICIPAL DIVERSION SYSTEMS

of eka sion



Ranney collector beside Mad River Humboldt Bay Municipal Water District

their production. The areas of irrigated lands, as well as other land uses, were determined in the land use survey which was also conducted in 1958.

This survey and the resulting data are reported in Chapter III.

## Water Rights

The data necessary for the determination of the total water requirements of an area must of necessity include the nature and extent of all rights which pertain to the water supply therein. For this reason, data with respect to water rights in general, and particularly those which pertain to the existing surface water diversions, are described in this report.

Most of the surface water use in the unit is based on riparian rights or on appropriative rights established under the provisions of the Water Commission Act of 1914. A few diversions are based on appropriative rights established prior to 1914. These earlier rights were initiated by actual diversion and beneficial use of water, or by posting notice of intended appropriation at the point of diversion and recording such notice in the office of the recorder of the county. No diversions based on court adjudications were noted in this investigation.

As of October 1, 1960, there were on file with the State Water Rights Board 88 applications to appropriate water from the streams of the unit. Of these 88 applications, 84 were for various local uses, amounting to a total of about 30 cubic feet per second of direct diversion, and for storage of 1,625 acre-feet per annum. The other four applications were for major projects not in existence in 1958. Two of these four were held by the California Water Commission under the provisions of Section 10500 of the Water Code for future diversion of 500,000 acre-feet per annum. The other two were held by the Humboldt Bay Municipal Water District and were for diversion of 200 cubic feet per second and for storage of 120,000 acre-feet per annum.

The California Law of Water Rights, as related to both surface and underground water, is described briefly in Appendix C. A tabulation of data relative to the applications on file with the State Water Rights

Board is presented in Table C-1 of Appendix C. Data pertaining to the apparent water rights exercised by the diversions described in this report are included in Table 6, described below.

## Surface Water Diversions

An attempt was made to locate and obtain data with respect to all diversions of 10 acre-feet or more per year. Since very few diversion systems were previously mapped, an intensive search of the unit by department personnel was necessary. Complete photographic coverage of the unit and a list of appropriate water rights were the chief means of locating diversions. Investigation of visible clues such as conduits, powerlines, and similar features, and of various water-using activities, and canvassing of residents were also of great assistance in the process. As each diversion system was located it was plotted on the photograph covering the site. Descriptions of diversion works were obtained generally through on-the-spot inspection; and other data such as history, uses, water rights, etc., by interviewing the owner, operator, or other persons familiar with the diversions. Certain of these data, such as water rights information, were verified to the extent feasible within the scope of this investigation. U. S. Geological Survey quadrangle maps were used in the field work, and to identify the diversion locations as explained below.

Systems for direct diversion of water, as well as those providing for storage, were located. Systems in use in 1958, and also those used within the previous five years, unless reported to be abandoned, were

included. Reservoirs which had surface areas of about three acres or more were mapped. This size was considered the minimum that could be delineated on the aerial photographs used. Reservoirs located along, and operated in conjunction with, ditches and pipelines are shown on the land and water use maps, but are not considered as separate systems nor are they assigned diversion locations. Similarly, points at which diversion conduits intercept minor intermittent streams, and receive small amounts of water in addition to the primary supply, are not considered as separate diversions.

Systems by which diverters collect their own field runoff or spill for reuse are not considered as diversions or assigned diversion locations. If return flow from another water user's operation is rediverted, or if there is doubt as to the origin of the water, the diversion is delineated and assigned a number. Diversion systems of water companies or groups of water users are considered as single units; individual customer distribution points are not shown on the maps.

Diversion points and main ditches or pipelines used to convey water from them are delineated on the 11 sheets of Plate 2, "Land and Water Use." The diversions are listed and described in Table 6.

## Location System for Surface Water Diversions

For purposes of identification, each surface water diversion is assigned a location by relating its position plotted on the photograph to the U.S. Geological Survey quadrangle map of the area. These diversion locations include the numbers of the townships, ranges, and sections in the federal land survey system where the diversions apparently are situated. The sections are subdivided into 40-acre plots (quarter-quarter-sections), and the diversion locations also indicate these plots. For example, diversion 6N/1E-15Hl, shown on Sheet 5 of Plate 2 labeled "15Hl,"



Sprinkler irrigation north of Arcata

AGRICULTURAL WATER USE



Irrigation pump on Mad River Diversion 6N/1E-8L1

is in the southeast quarter of the northeast quarter of Section 15,

Township 6 North, Range 1 East, Humboldt Base and Meridian (H.B.&M.). A

second diversion in a 40-acre plot is distinguished by changing the

final number "1" to "2", as for diversion 6N/1E-15H2.

## Descriptions of Surface Water Diversions

Descriptions, history, and other information relating to surface water diversions were obtained by field inspection, by interview with water users or their representatives, and by reference to prior reports and official records. This information is summarized in Table 6. Data in the table are arranged by diversion location number within each subunit. Each location number is followed by the name of the owner, the source of water, the purposes served, the quantity of water diverted during 1958, the extent of use, such as the number of acres irrigated and the method of application of water. If the purpose listed is not the usual use for that diversion, notation is made in the "remarks" column. The extent of domestic use is specified only when five or more connections are served. Watering of less than 10 head of livestock is considered to be a domestic use. The extent of irrigation use is based on the land use survey described in Chapter III.

The types of water rights under which the respective diversions are considered to be made are indicated in Table 6 under "apparent water right." Diversions apparently made under rights based on the appropriative doctrine (see Page C-5, Appendix C) are listed as "appropriative." Those diversions for which the conditions for riparian use, also described in Appendix C, apparently prevail, but for which no appropriation was known to exist, are listed as "riparian." Diversions listed as appropriative may also be riparian, although no attempt was made in such cases to determine the riparian status.

The actual amount of the right, if established and known, and a reference to the source of the data, are also included under "apparent water right." In the case of an appropriative right, the amount tabulated is that found in the filing, if any, or in the application, or in the latest permit or license which may have been issued in connection with the application. The reference given for an appropriation initiated after the effective date of the Water Commission Act of 1914 is the number of the application on file with the State Water Rights Board. For an appropriation made prior to 1914, the reference, if known, is the book and page number of the official records of the county in which the diversion is located. Although the "miners inch" is now legally 1/40 cubic foot per second, county records reveal that many of the filings made prior to 1914 specified a four inch head (1/50 cubic foot per second). As many filings did not specify, no attempt was made to differentiate between the miners inches claimed.

The determination of water rights under which the various diversions are made is based upon the best information available from the owner, from files of the State Water Rights Board and other official records, and from other sources. Although this information is believed to be accurate, it is emphasized that it is not based on sworn claims or testimony, and should in no way be construed to represent a conclusive determination of water rights.

Detailed descriptions of the diversion systems, including dams, pumps, and main conduits, as well as any special features, are also given in Table 6. The diversion systems are classified as to type - gravity, pump, or storage - according to the following definitions:

Gravity diversion - A system in which water is taken from its natural course at a diversion structure and conveyed by gravity through a canal or pipeline to the area of use. Such a diversion may have a reservoir on the stream, but the capacity is small compared with the amount of water diverted and provides no significant carryover storage from winter to summer.

TABLE 6

DESCRIPTIONS OF SURFACE WATER DIVERSIONS IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

Diversion				Water use in 1958		Арре	Apparent water right	right	indicated dete of		
location and Plate 2 sheet number	Diversion name and/or owner	Source	Purpass	Extent and method of use	Amount diverted in ocre-fest	Турв	Amaunt	Rafaranca	appra- prietien ar first uss	Dascription of diversion system	Remorks
H B & M						Beaver Sub	Subunit				
7N/3E-5L1 (Sheet 4)	United States Plywood Corp.*	Deaver Creek	Indust.	<b>*</b>	Not meas.	(°)	:	1	About 1953	Gravity; 500 feet of 6-1ech pipe and 2,500 feet of flume to log pond.	Former owner: Mytual Plywood Company. Sold to United States Plywood Corp. to 1958. Supplements log pond 7N/3E-6KL.
7N/3E-5L2 (Sheet 4)	United States Plywood Corp.*	Beaver Greek	Domestic	15 connections	Not meas.	Riparian	1	1	About 1953	Gravity; 2,200 feet of 3-inch pipe to 5,000-gallon storage tank.	Former owner: Matual Plywood Company, Sold to United States Plywood Corp. 19 1958.
7N/3E-6KI (Sheet 4)	Uelted States Flywood Corp.*	Redwood Creek	Indust.	Lumber mill and lo- acra log pond*	68	(c)	1	1	1953	Pump; 30-hp electric motor with about 1,000 feet of 5-tech pipe to log poad.	Former owner: Mutual Plywood Company. Sold to United States Plywood Corp. 1a 1958. Log pond supplemented by 7R/35- 511.
					(a)	Big Lagaan Subunit	Subunit				
8N/lE-31D1 (Sheet 3)	Elgin O. Edeline	Luffenholtz Creek	Power	(*)	Noce	Approp. 1	1.13 cfs /	A-11039 <sup>B</sup>	About 1850	Oravity; gravel dam 1 foot high, 20 feet long, with 50 feet of earth ditch and wood flume to water wheel.	Former owner: Baron Karl Von Loeffelholz, Horman Gastman, 'Pormerly used to operate savmill; now maintained as a standby system for power generation.
8N/IW-14KI (Sheet 3)	California State Department of Natural Resources; Division of Forestry	Tributary to Facific Ocean	Domestic Fire prot.	5 connections 15 fire trucks	Not meas. Approp.		0.035 cfs A-14216 <sup>a</sup>	A-14216ª	1951	Pump; 1.5-hp electric motor with 800 feet of 2-inch pipe to 5,000-gallon storage tank.	
8N/1W-23H1 (Sheet 3)	City of Trivided	M111 Creek	Musicip.	100 connections	37	Approp.	0.17 cfs	A-17662ª	About 1900	Pump; earth dam 10 feet high, 30 feet long, with 7.5-hp electric-powread pump and 3,300 feet of 4-inch pipe to 20,000- and 100,000-gallon storage tanks.	Former owner: Charles Kelatrom.
9N/1E-1901 (Sheet 2)	Georgia Pacific Corporation; Rammond-California Redwood Division	Oray Creek	Indust.	780-acre-foot log pend	Not meas.	Not mess. Approp. 1.0 cfs 780 af etcrege		A-12959 <sup>®</sup>	1947	Storage; earth dam 15 feet high, 1,770 feet long.	Former owner: Hammond Lumber Company.
(Sheet 2)	George McAllister	Tributary to Pacific Ocean	Irrig.	9 acres by sprinkler	12	Riparian	;	:	1948	Oravity and pump; earth and log dam 10 feet high, 50 feet long, with 5-hp electric-powered pump and 500 feet of 3-lech pipe to distribution system.	
10N/1E-29F1 (Sheet 1)	. William McNeil	Tributary to Stone Lagoon	Irrig.	56 acres by sprinkler Wot meas.	Not mess.	Riperien	;	ŀ	Prior 1919	Pump; 5-hp electric motor with direct connection to distribution system.	Former owners: Diez, Pialarsey, Horn. Area irrigated received supplemental supply from ground water.
10N/1E-2911 (Sheet 1)	. William McNeil	McDonald Greek	Stock.	24 acres by sprinklers 83 head	- <del>1</del> E	Riparian	1	i	Prior 1935	Pump: 5-bp electric motor with direct connection to distribution system.	Area irrigated received supplemental supply from ground water.
								1			

\* See remarks.
For lettered footcotes, see last page of table.

# DESCRIPTIONS OF SURFACE WATER DIVERSIONS IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

Diversion				Water use in 1957		App	Apparent woter right	right	Indicated		
facation and Plate 2 sheet number	Diversion name and/ar owner	Saurce	Purpase	Extent and method of use	Amaunt diverted in ocre-fest	Турв	Amount	Rafarence	appro- priatian or first use	Description of diversion system	Remarks
田 田 田 田						Blue Lake	Subunit				
6N/1E-6Q1 (Sheet 5)	Joe W. Bugenig	Morrie Creek	Trile.	27 acres by sprinkler	16	Riperian	1	1	1954	Pump; 15-hp electric moto, with 1,600 feet of 4-inch pipe to distribution eystem.	
(Sheet 5)	William F. Silva	Mad River	Irrig.	95 acres by flooding	88	Approp.	0.8 cfs	A-7476	1919	Pump; 15-hp electric motor and distribution system which includes 5,000 feet of 12-inch concrete main.	Former owners. Domingo Silva, Sr. Domingo Silva, Jr.
(Sheet 5)	Mary Pifferini, et al.	Mad Biver	Irrig.	38 acres by flooding. Not meas. Approp.	Not meas.		0.17 cfs	A-7713 <sup>6</sup>	1923	Pump: 5-hp electric motor and distribution system which includes 1,500 feet of 6., 8-, and 12-inch main.	Pormer owner: Claudio Pefferini. An additional 2 acree, presionaly irrigated, were idla or fallow in 1958.
(Sheet 5)	Marion J. Rorton	Mnd River	T 7 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	4 scres by sprinkler	Not meas. Riparian	Riperian	1	1	1922	Pump; 20-hp electric motor, with short pipeline to distribution system.	Pormer owner: William W. Turner. Portion of amount diverted used to irrigate an additional acreage in the Eel River Hydrographic Unit.
(Sheet 5)	Manuel Santos	Mad Biver	Irrik.	34 acres by sprinkler Not meas. Riparian	Not meas.	Riparian	:	:	Prior 1941	Pump; 20-hp electric motor with direct connection to portable system.	Portion of amount diverted used to irrigate an additional acreage in the Eel River Rydrographic Uni.
(Sheet 5)	Earl C. Johnson	Spring tributary to Mad River	Irrig.* Domestic	(b)	Not meas. Efparian	Riparian	1		Prior 1921*	Gravity; wood diversion structure with short pipeline to distribution system. Separate 0.4 mile pipeline serves Comestic users.	Former owners: McConnaghy, Pete Johnson, Irrigation use began in 1958.
6M/1E-11A1* (Sheet 5)	G. F. Timmons and Son	Grassy Creek	Irrig.	<b>*</b>	None	Riparian	1	1	Prior 1941	Pump; 30-hp butane engine with short pipeline to aprinkler distribution system.	Portable pump location warfee within 600 feet of location indicated. Previously irrigated 45 acres and watered a variable number of livestock.
(Sheet 5)	G. F. Timmons and Son	Lindsey Creek	Irrig. Stock.	36 acres by sprinkler 340 head	11	Riparian	;	:	Pr10r 1941	Pump; 30-hp butane engine vith short pipeline to distribution system.	Portable pump location varies within 800 feet of location indicated.
(Sheet 5)	Essex Mill Pond O. F. Timmons and Son	Springs tributary to Lindsay Creek	Indust.	150-acre-foot log storage pond*	Not meas.	(e)	1	1	Pr1or 1954	Oravity; earth dam 6 feet high, 3,000 feet long, with 150-acre-foot log pond.	Occasionally supplemented by a pump from Lindaay Greek.
63/1E-15R1 (Sheet 5)	Mercer-Fraser Co.	Mad River	Indust.	Gravel washing	70	Riparian	;	:	About 1930	Pump; 20-hp electric motor with short pipeline to plant.	
6N/1E-15R2 (Sheet 5)	Mercer-Fraser Co.	Mad Biver	Indust.	Gravel washing	Not mess. Riparian	Riparian	;	0 (	About 1930	Pump; 10-hp electric motor with short pipeline to plant.	
6N/1E-24G1 (Sheet 5)	A. W. Christie	Mad River	Irrig.	85 acres by sprinkler	98	Riparian	1	2 1	.1943	Pump; 20-hp electric motor with direct connection to distribution system.	

A See remarks.
For lettered footnotes, see last page of table.
-- Information not available.

TABLE 6 (Continued)

DESCRIPTIONS OF SURFACE WATER DIVERSIONS IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

		_										
	Remorks				Former owner: Benry Werner.				Former owner: Alfred Refmann. An additional 4 acres, previously irrigated, were idle or fallow in 1958.		Former owners: John Colyer, Clough.	Stockwatering use supplemented by TN/R-2TH1 and TN/AE-2TH1. All three diversions covered by same application for total of 0.14 cfs.
	Description of diversion system		Pump; two 15-hp electric motors with direct connection to distribution system.	Pump; 15-hp electric motor with direct connection to distribution system.	Pump; 5-hp electric motor with 0.25 mile of 4-inch pipe to distribution system.	Pump; concrete dam 3 feet high, 50 feet long, and 7.5-hp electric-powered pump with 600 feet of 6-inch pipe to distribution system.	Pump; 5-hp electric motor with direct connection to distribution system.	Gravity and pump: earth dam 16 feet high, 200 feet long, with hi, sare-foot regulatory reservoir, and two 7.5-hp electric. too aystem which includes 600 feet of 4-inch male.	Pump; 30-hp electric motor and sprinkler distribution system which includes 0.7 mile of 6-inch main.	Pump; concrete dam & feet high, 25 feet long, with 20-hp abetafre-powered pump with direct connection to distribution system.	Pump; 25-hp electric motor with 400 feet of 6-inch plpe to distribution system.	Pump; 9-hp gasoline engine with direct connection to distribution system.
Indicoted dote of	oppro- priotion or first use		1943	Prior 1952	1944	1946	1946	1952	1945	1951	1945	1953
ight	Referance	ntinued]	:	A-17996 <sup>a</sup>	:	A-11510 <sup>a</sup>	:	A-15085 <sup>8</sup>	A-11185ª	A-14519 <sup>B</sup>	1	A-15328*
Apparent water right	Amount	Subunit (Continued)	1	0.73 cfe	1	0.18 cfs	;	0.28 cfs	0.9 cfe	0.24 cfs	1	0.14 cfs*
Appe	Туре	Blue Loke	Riparian	Approp.	Riperian	Approp.	Riparian	Approp.	Approp.	Approp.	Riparian	Approp.
	Amount diverted in ocre-feet		73	72	9	_	15	36	14	51	ħζ	30
Woler use in 1957	Extent and method of use		109 acres by sprinkler	43 acres by sprinkler 50 head	5 acres by sprinkler	27 acres by spriokler (b)	38 acres by sprinkler 17 head	43 acres by sprinkler 45 head	130 acres by sprinkler 45 head	78 acres by sprinkler	55 acres by spriokler	lo head* by head*
	Purpose		Irrig.	Irrig. Stock.	Irrig.	Irrig. 27 8 Domestic (b)	Irrig. Stock.	Irrig. Stock.	Irrig. Stock.	Irrig.	Irrig.	Irrig. Stock.
	Source		Mad River	Mad River	Mad River Lagoon	South Fork Patrick Creek	Springs tributery to Strawberry Creek	Tributary to Strawberry Greek	Patrick Creek	Patrick Creek	Strawberry Creek	Mather Creek
	Diversion name and/or owner		A. W. Christie	Melvin P. Roberts, Jr.	James B. Werner	Alfred W. Thoma	T. George Everett	Albert R. and John R. Forrest	Renrietta Rartman	Edward C. Bott	Oscar N. Kuntz	Jese A. Luster
Diversion	location and Plote 2 sheet number	13 13 15 15 15	6N/lB-24G2 (Sheet 5)	(Sheet 5)	6N/lW-lBl (Sheet 5)	7N/1E-17E1 (Sheet 4)	7N/1E-17R1 (Sheet h)	7N/15-17R2 (Sheet 4)	7N/1E-18B1 (Sheet 4)	7N/1E-18H1 (Sheet 4)	7N/1E-18K1 (Sheet 4)	TN/15-27A1 (Sheet 4)

\* See remarks.
For lettered footnotes, see last page of table.
-- Information not available.

# DESCRIPTIONS OF SURFACE WATER DIVERSIONS IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

		I												
	Remorks		Portion of amount diverted supplement a stockwatering use of TR/12-7711. TR/12-7711 and TR/12-7711 covered by same water right application for total of 0.14 cfs.	Same as above.	An additional 68 acres, previously irrigated, were idle or fallow in 1958.	Former owner: United States Navy.	Former owners: Axe, Pete Boesen.	Former owner: Edward Nelson.			Previously irrigated 21 acres and vatered 50 head of livestock.	Former owner: A. A. Werner. An additional B scree, previously Arrigated, were idle or fallow to 1958.		Pormer owner: Mycoff.
	Osseription of diversion system .		Same system as above.	Same system as above.	Storage and pump; earth dam 50 feet high, 50 feet long, with 20-hp electric-powered pump and 5,500 feet of 6-knch pipe to distribution system.	Oravity; concrete dam 2 feet high, 5 feet long, with 1.0 mile of 6-inch pipe to 20,000- and 100,000- gallon storage tanks.	Greatty; small earth dam with short pipeline to distribution system.	Pump: 5-hp electric motor with direct conrection to distribution system.	Pump: 5-hp electric motor with 550 feet of 3-inch pipe to distribution system.	Pump: 7.5-bp electric motor with 650 feet of Linch pipe to distribution system,	Pump; 20-hp gasoline engine with direct connection to distribution system.	Pump: 15-hp electric motor with O.º mile of Lainch pipe to distribution system.		Storage and pump; earth dam 15 feet high, Loo feet, long, with lahp gasoline- powered pump and short pipeline to distribution system.
Indicated date of	priotion or first use		1953	1953	1945	1942	Prior 1938	About 1930	1936	1941	1951	Prior 1947		1944
right	Reference	( panuluc	A-15328 <sup>8</sup>	A-15328	1	;	:	:	A-10351 <sup>®</sup>	A-10317ª	1	1	Subunit	1
Apparent water right	Amount	Subunit (Continued)	0.1 ufs	0.14 cfs	1	1	1	1	0.05 cfs	0.03 cfs		1	Buffer Valley Su	1
App	Type	Blue Lake	Approp.	Арргор.	©	©	Riparian	Hiperien	Approp.	Approp.	Riperian	Riparian	Buffe	(e)
	Amount diverted in ocre-fest		13*	Not meas.	12	18	Not meas. Riparian	15	Not meas. Approp.	Not meas. Approp.	None	10		Not meas.
Water use in 1957	Extent and method of use		25 acres by sprinkler (*)	$1^4$ acres by sprinkler Not meas. Approp. (*)	16 acres by sprinkler 1,250 head	250 persons 100 head	16 acres by sprinkler	30 acres by sprinkler	7 acres by sprinkler	4 acres by sprinkler 12 head	(÷)	36 acres by sprinkler		3 acres by sprinkler 600 head
	Purpose		Irrig. Stock,	Irrig. Stock.	Irrig.	Stock.	Irrig.	Irrig.	iris.	Irrig. Stock.	Irrig.	50 51 E		Irrig. Stock.
	Source		Lindsay Creek	Lindsay Creek	Dike Creek	Norton Creek	Norton Creek	Norton Creek	Widow Abite Creek	Widow White Creek	Lindsay Creek	Widow white Creek		Tributary to Mad River
Š	Diversion name and/ar awner		Jess A. Luster	Jess A. Luster	Julius M. Rooven	Rumboldt County Division of Aviation	Hens Didel	Henry L. Sorensen	John D. Deily	Carl Martin	Carroll Hauser	Albert C. Hartman		Roy Fulton
Diversion	ond Plote 2 sheet number	20 20 20	(Sheet b)	7N/1E-27R1 (Sheet b)	(Sheet b)	(Sheet b)	7N/1E-30J1 (Sheet b)	TN/1E-30Q1 (Sheet b)	7N/1E-31C1 (Sheet %)	7N/1E-32F1 (Sheet 4)	TW/lE-34Al (Sheet h)	7N/JW-25JJ (Sheet 4)		3N/3E-3F1 (Sheet 8)

• See remarks.

For lettered footnotes, see last page of table.
-- Information not available.

TABLE 6 (Continued)

DESCRIPTIONS OF SURFACE WATER DIVERSIONS IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

	Remorks		Tumbold Lumber Corporation. System removed and use discontinued in 1959. Appropriative right to store water revoked January 1960.		Mater exported outside of Mad River- Redwood Creek Hydrographic Unit for use in City of Bureka.	urmer owner: G. L. Speier. Area lirigated received supplemental supply from SN/2E-36cl.	ormer owner: G. L. Speder. Amount diverted eupplements 5N/2E-36Pl. Extent of use reported under 5N/2E-36Pl.		rtin Peters.		Insufficient information to determine type of water right for portion of area irrigated.	bile pump location waries within 1,000 feet of location indicated. An additional warres prevaluely and additional warres prevaluely.	irrigated, were idle of tallow in 1970	
	Œ.		ام ا		Water exported outside o Redwood Creek Hydrogra use in City of Eureka.	Former owner: G. L. Spel irrigated received supp supply from SN/2E-3601.	Former owner: G. L. Speier, Adverted eupplements 5N/25-36 Extent of use reported under 5N/25-36F1.		Former owner: Martin Peters.	·	Insufficient infortype of water riarrangeted.	Mobile pump location waries within 1,000 feet of location indicated. An additional 4 acres, previously	irrigated, Vere	
	Description of diversion system		Storage and pump; concrete dam 43 feet bigh, 92 feet long, with 85-acre-foot log pond and two 30-hp electric powered pumps with short pipelines to mill area.*	Storage and pump; earth dam 25 feet high, 300 feet long, with loup electric-powered pump and 300 feet of 3-inch pipe to area of use.	Storage and gravity; concrete dam 105 feet high, 260 feet long, with 3,000-acre-foot reservoir and 24- and 36- inch pipelines to Eureka.	Pump; 25-hp electric motor and sprinkler distribution system which includes 2,700 feet of 6-inch main.	Pump; 40-hp electric motor and spriokler distribution system which includes 3,200 feet of 6-inch main.		Pump; 10- and 15-hp electric motors and distribution system which includes 1,300 feet of 6-inch main.	Pump; 5-hp electric motor with short pipeline to collection pond also fed by springs, and boseter pump with 1,000 feet of 4-inch pipe to area of use.	Pump: 15-hp electric motor with short 6-inch pipeline to distribution system.	Nump; 25-hp gasoline engine with direct connection to portable sprinkler system.	Pump; 55-th gasoline engine with direct connection to portable sprinkler system.	
indiceted dets of	eppre - prietion or first usa		1946	1952	1933	1948	1948		Prior 1948	1951	Prior 1950	1943	1943	
right	Reference	Subunit (Continued)	A-14063* A-142573*	1	A-76218	;	1	Subunit	1	1	1	1	:	
Apporant water right	Ameunt		0.12 cfs 85 af storage	1	7.74 cfs 750 af storage	1	!	Little River Sub	1	1	ı	1	1	
Арр	Турв	Butter Valley	Approp.	(0)	Approp.	Riparian	Riparian	Little	Riperian	Riparlan	Riparian	Riparian	Riparian	
	Amount divertad in ocra-feat	91	Not meas. Approp. Approp.	Not meas.	3,866	8.	*06		172	#	8	12	m	
Water use in 1958	Extent and method of use		Lumber mill and 85- acre-foot log pond	10 acree by sprinkler 0.9 kw installed generating capacity	(*)	109 acres by sprinkler 230 head	*		80 acres by eprinkler 75 head	15 acres by eprinkler 25 head	99 acres by sprinkler	16 acres by sprinkler* 50 head	8 rcres by sprinkler	
	Purpose		Indust.	Irrig. Power	Export*	Irrig. Stock,	Irrig.		Irrig. Stock.	Irrig. Stock.	Irrig.	Irrig. Stock,	Irrig.	
	Source		Boulder Creek	Spring tributary to Mad River	Mad River	Mad River	Mad River		Little River	Spring tributary to Little River	Little River	Bulwinkle Creek	Little River	
	Diversion nome ond/or owner		Addiecraft, Inc.	Dr. C. G. Wiggins, et ux.	Sweasey Dam City of Eureka	Lois Speier	Lois Speier		John Christie	Dr. Sanford M. Moose	Dr. Sanford M. Moose	John E. Balke	John B. Balke	
Diversion	location and Plote 2 shaat number	нвем	bN/3E-6Hl (Sheet 7)	hN/3E-21CI (Sheet 7)	5N/2E-16G1 (Sheet 6) (Export)*	5N/2E-36Pl (Sheet 6)	5N/2E-36q1 (Sheet 6)		7N/lE-8Cl (Sheet 4)	7N/1E-8E1 (Sheet b)	7N/lE-8F1 (Sheet b)	7N/1E-8G1* (Sheet b)	7N/1E-8G2 (Sheet 4)	

\* See remarks.
For lettered footcotes, see last page of table.
-- Information not available.

MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

$\overline{}$												
	Remorks	Water right is in name of Davis S. Ward, President of Cottage Gardens Company, Inc., lessee.	Porser owners. Anna M. Sullivan, W. L. Towneed. Supplies commun- ties of Moonstone Reach, South Trinidad, and Westhever; not as e public utility, but with eurplus	Former owner: Little Hiver Lumber Company, Supplies town of Cremnell and an estimated 50,000 gallone per dey for brake coolant, etc., for logging operations.	Service area received supplemental supply from ground water.	Former ownere: Korbel Brothere, Northern Redwood Company,	Former owners: Korbel Brothers, Rorthern Redwood Company,	Appropriative water right is in name of Stete of California Division of Highways.		Former owner: Arthur S. Davison.	Ownerubly transferred to Rumboldt. County after 1958.	Agricultural activities replaced by a lumber mill after 1958,
	Description of diversion system	Gravity and pump; wood dama 3 feet high, 15 feet long, with streamaide sump and 15-hp electric-powered	pump with 0.3 mile of pipe to pound at area of use.  Pump; 1.5-hp electric motor with about 600 feet of 2-inch main to service area.	Oravity; earth and log dam 6 feet high, 25 feet long, with 1.8 miles of $l_{\rm b}$ to 8 inch pipe to distribution system.	Gravity; with 1.3 mile of 2- to 4-inch pipe to three 50,000-gallon storage tanks.	Pump; 25- and 5-hp electric motors with a short pipeline to area of use.	Gravity; with 500 feet of 30-inch pipe to log pond.	dravity; concrete dam & feet high, 15 feet long, with b,800 feet of 4-inch pipe to aree of use.		Pump; 10-hp electric motor with direct connection to distribution eystem,	Gravity; concrete and board dam 6 feet high, 60 feet long, with 0.6 mile of 12-inch pipe to hetchery.	Pump; 25-hp electric motor with direct connection to distribution system.
indicated date of	appra- priotion or first usa	1950	About 1930	1920	Prior 1930	About 1896	About 1900	1955		About 1925	1935	1947
tqh!	Reference	Continued)	A-77038	;	A-12233ª	1	;	A-16756 <sup>8</sup>		ŧ	A-8391&	;
Apporent water right	Amount	Subunit 0.19 cfs	31,000 gpd	1	Approp.   O.OUS cfa   A	1	;	0.031 cfs	Orick Subunit	Į.	1.86 efs	1
App	Type	Approp.	Approp.	Riparian	Approp.	Hiparian	(°)		Ol	Riparian	Approp.	Riparian
	Amount diverted in ocre-feet	165	Not meas.	Not mess. Riparian	Not meas.	38	Not meas,	Not meas. Approp.*		78	Not meas. Approp.	51
Water use in 1958	Extent and method of use	54 acres by sprinkler	105 connections*	135 connections* (*)	400 connections*	Lumber mill	2-scre log pond	100 persons		68 acres by sprinkler 75 head	Ralsing fish for stock	29 acree by sprinkler 52 head
	Purpase	Irtk.	Municip.	Municip. Indust.	to Municip.	Indust.	Indust,	Domestic		Irrig. Stock.	Fish	Irrig.*
	Source	Bulwiokle Creek	Tributary to Pacific Ocean	Freeman Creek	Spring tributary to North Fork Mad River	North Fork Mad River	Tributary to North Fork Mad River	Tributary to Long Frairie Greek		Prairie Creek	Lost Man Creck	Prairie Creek
	Diversion name ond/or awner	Uno Nylender* Cottago Gardens Company, Inc., lessee	Rovena J. Townsend	Georgia Facific Corp.; Rammond- California Redwood Division	City of Blue Lake	Simpson Redwood Co.	Simpson Redwood Co.	Harold Preston* California State Division of Righways, lessee		Robert S. Davison	California State Department of Fish and Game* Rumboldt County, lessee	Arcata Redwood Company; Mill Davie
Diversion	ocation and Plate 2 sheet number	R B & M 7N/1E-8R1 (Sheet b)	83/1E-32M (Sheet 3)	8N/1E-33KG (Sheet 3)	6%/2E-21Cl (Sheet 5)	6M/2E-28L1 (Sheet 5)	6N/2E-28MQ (Sheet 5)	7H/35-31C1 (Sheet 4)		11x/1E-22K1 (Sheet 1)	11B/15-23A1 (Sheet 1)	(Sheet 1)

See remarks.
 Por lettered footnotes, see last page of table.
 Information not available.

TABLE 6 (Continued)

# DESCRIPTIONS OF SURFACE WATER DIVERSIONS IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

	Ramorks		Former owners: A. H. Marehall, Arthur	H. and John H. Jeans. Occasionally supplemented by ditches from east	hranch of Bobart Greek. The lande irrigated by this diversion are within the high-water line of Ruth Reservoir now under construction.	Former owners: Roy A. Parker, Robbios.	Former owners: McKnight, Strickland. This pomp used at 3 poice of diversion on the Mad River. The	lande irrigated hy this diversion are within the high-water lice of Ruth Reservoir now under construction. An additional l4 acree, previously irrigated, ware idle or fallow to 1998.	Former owners: Tompkios, Ed Link, C. R. McGill. New ditch and reservoir activated in September 1958.	Former owner: Dolan.				
	Description of diversion system		Oravity; earth and rock dam	with 0.8 mile of earth ditch and natural channel	and 450 feet of 6-1och pipe to area of use.	Gravity; wooden head box with 740 feet of 5-inch pipe to area of use.	Pump; 5-bp gasoline engine with direct connection to portable aprinkler system.		Storage and gravity; earth and rock dam 15 feet high, 220 feet long, with 0.5 mile of earth ditch to e 5 acre-foot reservoir.*	Pump; 15-hp electric motor with about 400 feet of 6-inch pipe to log pond.				
Indicated date of	appro- priation or first use		1889			1900	Prior 1958		Prior 1904	About 1944				
right	Reference		Book 1	page 162 Book 1d	page 163	Book 3 <sup>d</sup> page 3 <sup>4</sup>	1		Book 2 <sup>d</sup> page 440	1		(No diversions located in this subunit)		
Apparent water right	Amount	Ruth Subunit	200 MI	300 MI		100 MI	:		100 MZ	:	Snow Comp Subuni	ated in thi		
App	Туре	Ruth	Approp.			Approp.	Riparian		Approp.	(°)	Snow Co.	eions loca		
	Amount diverted in ocre-feet		275			220	10		123	Not meas.		(No diver		
Woter use in 1957	Extent and method of use		3 kw capacity	4 acres by sprinkler (h)		3.5 kw capacity 4 acree by eprinkler (b)	9 acree by eprinkler*		9 acree by aprinkler 25 head (b)	Small log pond				
	Purpose		Power	Irrig. Domasetic		Power Irrig. Domestic	Irrig.		Irrig. Stock. Domestic	Indust				
	Source		Middle Fork	Bobart Creek		Springe tributary to Chopictoy Creek	Mad River		Tompkins Creek	Mad River				
	Diversion name and/or owner		Aubert N. and	Mary Lou Jeans		Anna Terral	Earl P. Dillon		Roy Oallagher and Olen Rector	Six Rivere Pine Sales (Lester J. Geijsbeck, et al.)				
Diversion	sheet number	E B	28/7K-2F1	(Sheet 10)		2S/TE-3Al (Sheet 10)	28/TE-4C1 (Sheet 10)		2S/7E-23J1 (Sheet 10)	38/8E-6Al (Sheet 10)				

• See remarks.

Information not available.

A lefter to applications to appropriate water filled with State Water Rights Board.

b. Domestic use by less than 5 families or connections.

c. Insufficient information to determine type of water right.

d. Printy County records.

Pump diversion - A system in which water is pumped from its natural course through a pipeline to the area of use or to a gravity conduit located at a higher elevation.

Storage diversion - A system consisting of, or including, a surface reservoir having significant carryover storage within each season or from season to season.

Systems not exclusively of one of these basic types are listed as combinations of those types which best describe them.

The "remarks" column contains such information as the names of former owners, known changes of ownership after 1958, and further details explaining entries in the other columns.

## Records of Surface Water Diversions

Continuous or periodic measurements of the quantities of surface water diverted by 40 of the 65 diversions in use in the unit were made by the Department of Water Resources in 1958. Detailed results of the measurement program are reported in Table 7.

Determinations of diverted quantities were made primarily by testing of pumps. These observations were supplemented by interviews of water users to obtain data on possible abrupt changes in operation between readings, periods of operation, etc.

For each diversion measured, Table 7 gives the use, the point and method of measurement, and the monthly and total quantities diverted.

Notations in the "use" column regarding the irrigation period indicate the overall period of irrigation, but not necessarily that daily or continuous irrigation was practiced throughout the period. The quantities given in the table are based on various methods listed in the column "Method of observation and calculations." Where monthly data were sufficiently reliable, the quantities are shown. When the diversion during a month is

TABLE 7

# MONTHLY RECORDS OF SURFACE WATER DIVERSIONS MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

1958

	Remarks																			
	Tatai		89		37	12	34		16	88	11,0	02 02	8	73	72	9	€.	15	36	14
	Dec		2		Cv	0	0		0	0	o	1	е	0	0	0	0	0	0	0
	N 0 ×		9		Qi	0	0		0	0	0	1	0	0	0	0	0	0	0	0
	0ct		12		۵.	0	1		.2	9	0	1 1	0	0	<b>6</b> 0	0	0	-	0	0
	Sept		18		~	1	1		<u>-</u>	8	0	1	8	<b>-</b>	6	0	0	C)	0.	-
e-feet	Aug		39		.77	2	10		٧.	19	5	1 1 1	39	33	ग <sup>ै</sup> ं	٦	•	м	1.1	O)
ın acr	Jul		00		9	EU.	n		0	2	e <sub>9</sub>	T H	39	33	15	5	e.C/	8	11	9
liverted	dun		-		5	la.	8		0	1 12	0	1 2	0	0	6	0	<u>.</u>	-2	9	m
Amount diverted, in acre-feet	May		0		ব	0	C		0	8	0	t t	0	0	<b>-</b>	0	0	œ	0	CI .
A	Apr		0		m	0	p-4		0	0	0	1	0	0	0	0	0	0	0	0
	Mar	t dia	0	1 upqr	CV.	0	0	Subunit	0	0	0		0	0	0	0	0	0	0	0
	Feb	Beaver Subunit	0	Big Logaen Subuni	C4	0	0		0	0	0	t 6	0	0	0	0	0	0	0	0
	Jan	Bea	0	Big Le	C)	0	0	Blue Lake	С	0	0	1	0	0	0	0	0	0	0	0
Method of	abservation and colculation		Pump test and power records		Pump test and power records	Pump test and operation record	Pump test and power records		Pump tout and power records	Pump teat, power records, and operation record	Estimated discharge and hours of operation	Eattmated pump capacity and operation record	Sprinkler rating and operation record	Sprinkler rating and operation record	Pump test, power records and operation record	Nump test and operation record	Estimated pump capucity and power records	Pump test, power records and operation records	Pump teut and operation record	Римр test and ромет тесогом
Point of	medsurement or estimate		At pump		At pump	At pump	At pump		At ըստը	At pump	At pump	At pump	At area of use	At area of use	At pump	At pump	At pump	At pump	At pamp	At pump
	Use		Industrial		Municipal	Irrigation 6/9/58 - 9/6/58	Irrigation and stockwatering		Irrigution 8/14/58 10/21/58	Irrightion 5/12/58 10/16/58	Irrigution and atockwatering 7/9/58 - 8/27/58	Induntrial	Irrigation 7/4/58 - 9/6/58	Irrigation 7/4/58 - 9/6/58	Irrigution 5/13/58 - 10/14/58	Irrigation 5/20/58 August, 1958	Irrigation and domestic	Irrigation and atockwatering 5/15/58 - 10/14/58	Irrigution and stockwatering 6/21/58 - 9/2/58	Irrigation and atockwalreing
ć	Diversion nome or owner		United States Plywood Corp.		City of Trinidad	George McAllister	William McMeil		Joe W. Bugenig	William F. Silva	O. F. Timons and Son	Mercer-Fraser Co.	A. W. Christie	A. W. Christie	Molvin P. Roberta, Jr.	James II. Werner	Alfred W. Thoma	T. George Everett	Albert R. and John R. Forrest	Henrictia Hartman
	Diversion	H B & M	7N/3E-6KI		8N/1W-23H1	9R/1W-26L1	10N/1E-29L1		6N/1E-6Q1	GN/1E-7J1	6N/1E-11C1	GN/1E-15/12	CN/1E-24G1	6N/18-2402	6N/PE-31H1	6N/1W-1B1	7N/1E-17E1	7N/18-1781	7N/15-17A2	7N/18=18B1

e Seeremones e Entimated quantity

## MONTHLY RECORDS OF SURFACE WATER DIVERSIONS MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

	Remorks																					
	Total		>1	77	e 3	13	12*	18	14	100		3,866	a06	o		172	V.3	8	12	m	57	
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	000		0	0	0	0	0	Ce	0	0		316	0	0		92	0	0	0	0	Cu	
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-feet	Aug		8	12	10	-3	en en	~	-3			415	30¢	30		L3	e <sub>C4</sub>	-2 -14	~	0	00	
th ocri	ام		16	11	<b>←</b>	М	©_3	**	<u> -</u>	:		411	30¢	30°		51		4,1	-	εň	00	
iverted,	L C		ç	0	00	-3	6	eri	m			37.1	20°	<sup>6</sup> 02		GC CV	•	0	0	0	-	
Amount diverted, in ocre-feet	¥ 0 X		М	0	0	0	6 ml	-	0	1		372	0	0		-7	С	0	0	0	-	
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	₩ o.c	Subunit (Continued)	0	0	0	0	0	ri	0	0	Subuni	261	0	0	Subunit		0	0	0	0	0	
	Feb	Subunit	0	0	0	0	0	-	0	0		278	0	0	Little River S		0	0	0	0	0	
	Lon	Blue Loke	0	0	0	0	0	Ci	0	0	Butter Vattey	390	0	0	Lille	ت	0	0	0	0	0	
M	observation and	6	Pump test and power records	Pump test and operation record	Pump test and operation record	Pump test and operation record	Estimated discharge and power records	Daily change in storage	Pump test and operation record	Estimated discharge and hours of operation		City of Bureka measurement	Estimated discharge and hours of operation	Estimated discharge and hours of operation		Pump test and power records	Satimated discharge and hours of operation	Pump test and operation record	Pump test and operation record	Pump test and operation record	Pump test and power records	
0	measurement or estimate		At pump	At pump	At pump	At pump	At pump	At storage tank	At pump	At pump		At Rubbard Lane	At pump	At pump		At pump	At pump	At pump	At pump	At pump	At pump	
	Use		Irrigation	Irrigation 7/11/58 - 9/6/58	Irrigetion and stockwatering 6/k/58 - 9/15/58	Irrigation and stockwatering 6/4/58 - 9/15/58	Irrigation and stockwatering 5/15/58 - 9/77/58	Domestic and stockening	Irrigation 6/10/58 - 9/6/58	Irrigetion 6/1/58 - 8/31/58		Export	Irrigation and stockwatering 6/16/58 - 9/6/58	Irrigation and atockwatering 6/16/58 - 9/6/58		Irrigetion and stockering	Irrigation and stockwatering	Irrigetion 7/6/58 - 9/6/58	Irrigation and stockwatering 6/30/58 - 8/29/58	Irrigation 7/16/58 - 7/21/58	Irrigation	
	Diversion nome		Edward C. Bott	Osear N. Kunts	Jess A. Laster	Jess A. Luster	Julius M. Booveo	Rumboldt County Division of Aviation	Henry L. Sorensen	Albert C. Hertman		Svendey Dun	Lois Speier	Lois Speier		John Christis	Dr. Sanford M. Moosa	Dr. Sanford M. Moose	John E. Balke	John E. Balke	Uno Mylander	See remorks
	Diversion	H B & X	711/18-1883	7M/18-1803	TN/LE, 27A1	TN/12-27EL	T#/12-2801	711/12-29B1	TN/12-3001	78/14-2551		5N/2E-1601	5H/wE-36Pl	5#/2E-3641		TM/12-801	TR/12-821	7M/1E-871	TR/12-801	TN/12-802	TH/12-8R1	San San ra

e See remorks
e Estimated quantity
- e - Diversion estimated for period indicated

TABLE 7 (Continued)

## MONTHLY RECORDS OF SURFACE WATER DIVERSIONS MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

1958

	Remorks							Reported diversion total doss not in clude andetermined	connections.		Reported diversion total does not include undetermined	smount for two domestic connections.			Amount diverted 9/12/56 - 10/12/56 used to fill 5 ecre- foot reservoir. Amount diverted 10/12/58 - 12/31/58 thollade undetermined emount of spill below point of measurement.		
	Total		38		20	22		30*	245	275	*0n	웰	\$250	30	123		
	Dec		-		0	0		0	ৱ	เร	0	وا	6	0	15*		
	Nov		m		0	0		0	ଥା	&	0	ا∞	80	G	15		
	0ct		80		0	<b>1</b> 0		9	য়	23	00	ωl	16	8	15*		
	Sept		-		~	5		9	ଥା	%	<b>®</b>	∞I	97	0	8.		
9 - feet	Aug		<b>6</b> 0		10	12		9	티	24	80	ا∞	16	C4	9		
Amount diverted, in acre-feet	Jul		2		12	14		9	티	54	<b>©</b>	ω <sub>1</sub>	16	C4	9		
iverted	Jun		7		c	10		40	ଥା	56	00	ω <sub>1</sub>	16	1	0		
nount o	Moy		1		0	60		0	디	21	0	83	52	0	110		
Ā	Apr		1		0	0		0	ଛା	8	0	53	52	7	n°		
	Mar	ā	п	ا۔	0	0	-1	0	티	21	0	53	52	0	II.	nun!	abured)
	Feb	ork Subu	г	Orick Subunit	٥	0	Ruth Subunit	0	118	18	0	SI	23	0	010	mp Sut	locs me
	Jon	North Fark Subynii	-	Orich	0	0	Ruth	0	23	23	0	53	52	0	o II	Snow Camp Subunit	No diversions measured)
and the state of t	observation and		Pump test and operation record		Pump test and power records	Fump test and operation record		Pump test and operation record	Nozzle rating and	diverted	Pump test and operation record	Nozzle reting and	diverted	Pump test and operation record	Depth-flow relationship and staff gage		
90 0000	medsurement or estimate		At pump		At pump	At pump		At area of use	At power plant	Total	At area of use	At power plant	Total	At pump	100 feet below intake		
	Use		Industrial		Irrigation 7/8/58 - 9/15/58 and stockmetering	Irrigation and stockwatering 5/14/58 - 10/12/58		Irrigation 6/1/58 - 11/1/58	Power and domestic		Irrigation 6/1/58 - 11/1/58	Power and domestic		Irrigation 4/15/58 - 10/31/58	Irrigation 5/1/58 - 9/9/58, domestic and stockwatering		
	Diversion name or awner		Simpson Redwood Co.		Robert S. Davison	Arcata Redwood Co.		Aubert R. and Mary Lou Jeans			Anna Terral			Earl P. Dillon	Noy Gallagher and Olen Rector		
	Diversion	200 日 200 年	6N/2E-28L1		11N/1E-22KG	118/12-2791		28/TE-2F1			28/78-341			2S/7E-4C1	25/7E-23J1		

• Secremarks
• Estimated quantity
--\*\*-- Oversion estimated for period indicated

-40-

known to have been zero, it is so indicated. The data, however, were sometimes not sufficiently detailed to justify a breakdown into monthly quantities. These cases are indicated by --NR--. Dashes are used to indicate that a quantity was not determined. The measurements are designated as estimates when only incomplete or somewhat uncertain data could be obtained.

## Index to Surface Water Diversions

An alphabetical index to diversion names and owners is provided in Table 8 at the end of this chapter. For each diversion, this table indicates the diversion location, subunit, and county. For convenience in finding data regarding individual diversions, the sheet number of Plate 2 and the pages on which pertinent data appear are also provided.

## Imports and Exports

There were no imports of surface water into the Mad River-Redwood Creek Hydrographic Unit in 1958. There were three diversions from which water was exported, all into the Eel River Hydrographic Unit. The largest of these is the Sweasey Dam diversion located as 5N/2E-16Gl, on the Mad River. All of the 3,866 acre-foot output from this diversion was exported for use at Eureka. The other two diversions, also from Mad River, were for irrigation of areas lying partly on each side of the hydrographic unit line. These two diversions were not measured. One, 6N/1E-7Ll, irrigated 38 acres in the Mad River-Redwood Creek Hydrographic Unit and 14 acres in the Eel River Hydrographic Unit in 1958. The other, 6N/1E-7Jl, irrigated 4 acres and 16 acres in the two units, respectively.

### Consumptive Use

In the Mad River-Redwood Creek Hydrographic Unit, virtually all of the consumptive use of applied water is in connection with irrigated

agriculture, lumber mill operations, and urban uses. Consumptive use of water is defined as any type of use through which water is rendered unavailable for reuse. Processes in which water is consumptively used are transpiration and building of plant tissue by vegetation; evaporation from water surface, foliage and adjacent soil; and consumption and evaporation by urban and other nonvegetative types of land use. Certain uses of water, such as for hydroelectric power generation, fish culture, and mining operations, are essentially nonconsumptive.

The total of applied water, from both surface and ground sources, consumptively used in the Mad River-Redwood Creek Hydrographic Unit is estimated to have been about 4,500 to 5,000 acre-feet in 1958. The amount consumed by irrigation use was about 2,700 acre-feet, the remainder being consumed about equally by municipal-domestic use and by lumber mill operations. Consumptive use for other purposes was negligible.

TABLE 8
INDEX TO SURFACE WATER DIVERSIONS IN
MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

Diversion name	Diversion	Subunit	F	References
and/or owner	location	ond county	Plote 2 sheer no.	Text and appendixes page nos
	H B & M			
Addison Dam Roddiscraft, Inc.	4N/3E-6H1	Butler Valley Humboldt	7	34. C-11
Arcata Redwood Company Hill Davis	llN/1E-27Q1	Orick Humboldt	1	35. 40. 57. C-13
Balke, John E.	7N/1E-8G1 7N/1E-8G2	Little River Little River Humboldt	1 <sub>4</sub> 1 <sub>4</sub>	34. 39. 56 34. 39. 57
Blue Lake, City of	6N/2E-21C1	North Fork Humboldt	5	22, 35. C-11
Bott, Edward C.	7N/1E-18H1	Blue Lake Humboldt	4	32. 39, 55, C-12
Bugenig, Joe W.	6N/1E-6Q1	Blue Lake Humboldt	5	31, 38, 55
California State Department of Fish and Game Humboldt County, lessee	11N/1E-23A1	Orick Humboldt	1	35, C-10
California State Department of Natural Resources; Division of Forestry	8n/1w-14K1	Big Lagoon Humboldt	3	30, C-11
California State Division of Highways	See Preston, E	[arold		
Christie, A. W.	6N/1E-24G1 6N/1E-24G2	Blue Lake Blue Lake Humboldt	5 5	31, 38, 55 32, 38, 55
Christie, John	7N/1E-8C1	Little River Humboldt	14	34, 39, 56
Cottage Gardens Company, Inc.	See Nylander,	Uno		
Daily, John D.	7N/1E-31C1	Blue Lake Humboldt	4	33, 56, C-11
Davis, Hill	See Arcata Red	lwood Company		
Davison, Robert S.	11N/1E-22KI	Orick Humboldt	1	35, 40, 57
Dillon, Earl P.	2S/7E-4C1	Ruth Trinity	10	36. 40, 57
Dudal, Hans	7N/1E-30J1	Blue Lake Humboldt	4	33. 56
Edeline, Elgin O.	8N/1E-31D1	Big Lagoon Humboldt	3	30, C-11

## TABLE 8 (Continued)

## INDEX TO SURFACE WATER DIVERSIONS IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

Diversion name	Diversion	Subunit		References
and/ar awner	location	and county	Plote 2 sheet no	Text and appendixes page nos.
	H B & M			
Essex Mill Pond G. F. Timmons and Son	6N/1E-14B1	Blue Lake Humboldt	5	31
Eureka, City of	See Sweasey Da	am		
Everett, T. George	7N/1E-17R1	Blue Lake Humboldt	14	32, 38, 55
Forest, Albert R. and John R.	7N/1E-17R2	Blue Lake Humboldt	4	32, 38, 55, C-12
Fulton, Roy	3N/3E-3F1	Butler Valley Humboldt	8	33, 56
Gallagher, Roy and Rector, Glen	2S/7E-23J1	Ruth Trinity	10	36, 40, 57
Geijsbeek, Lester J., et al.	See Six Rivers	s Pine Sales		
Georgia Pacific Corporation; Hammond-California Redwood Division	8n/1E-33Kl 9n/1E-19Gl	Little River Big Lagoon Humboldt	3 2	35 30, c-11
Hartman, Albert C.	7N/1W-25J1	Blue Lake Humboldt	14	33, 39, 56
Hartman, Henrietta	7N/1E-18B1	Blue Lake Humboldt	14	32, 38, 55, 56, C-11
Hauser, Carroll	7N/1E-34A1	Blue Lake Humboldt	14	33, 56
Hooven, Julius M.	7N/1E-28D1	Blue Lake Humboldt	14	33, 39, 56
Horton, Marion J.	6N/1E-7R1	Blue Lake Humboldt	5	31, 55
Humboldt County	See California	a State Department	of Fish and	Game
Humboldt County Division of Aviation	7N/1E-29B1	Blue Lake Humboldt	4	33, 39
Jeans, Aubert N. and Mary Lou	2S/7E-2F1	Ruth Trinity	10	36, 40, 57
Johnson, Earl C.	6N/1E-9R1	Blue Lake Humboldt	5	31, 55
Kuntz, Oscar N.	7N/1E-18K1	Blue Lake Humboldt	4	32, 39, 55
Luster, Jess A.	7N/1E-27A1 7N/1E-27H1 7N/1E-27R1	Blue Lake Blue Lake Blue Lake Humboldt	ή ή ή	32, 39, 56, C-12 33, 39, 56, C-12 33, 56, C-12

## TABLE 8 (Continued)

## INDEX TO SURFACE WATER DIVERSIONS IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

		Subunit	R	eterences
Diversion name and/or owner	Diversion Location	ond county	Plote 2 sheet no.	Text and appendixes page nas
	H B & M			
Martin, Carl	7N <b>/1</b> E-32F1	Blue Lake Humboldt	4	33, 56, C-11
McAllister, George	9N/1W-26L1	Big Lagoon Humboldt	5	30, 38, 55
McNeil, William	10N/1E-29F1 10N/1E-29F1	Big Lagoon Big Lagoon Humboldt	1	30, 55 30, 38, 55
Mercer - Fraser Company	6n/1E-15H1 6n/1E-15H2	Blue Lake Blue Lake Humboldt	5 5	31, 38 31
Moose, Dr. Sanford M.	7N/1E-8E1 7N/1E-8F1	Little River Little River Humboldt	14 14	3 <sup>4</sup> , 39, 56 3 <sup>4</sup> , 39, 56
Nylander, Uno	7N/1E-8R1	Little River Humboldt	l <sub>↓</sub>	35, 39, 56, 57, C-11
Pifferini, Mary, et al.	6N/1E-7L1	Blue Lake Humboldt	5	31, 41, 55, C-10
Preston, Harold	7N/3E-31C1	North Fork Humboldt	14	35, C-12
Rector, Glen	See Gallagher	, Roy		
Roberts, Melvin P., Jr.	6N/SE-31HI	Blue Lake Humboldt	5	32, 38, 55, C-13
Roddiscraft, Inc.	See Addison D	am		
Santos, Manuel	6N/1E-8L1	Blue Lake Humboldt	5	27, 31, 55
Silva, William F.	6N/1E-7J1	Blue Lake Humboldt	5	31, 3°, 41, 55, C-10
Simpson Redwood Company	6N/SE-58WI 6N/SE-58TI	North Fork North Fork Humboldt	5 5	35, 40 35
Six Rivers Pine Sales Lester J. Geijsbeek, et al.	3S/8E-6Al	Ruth Trinity	10	3€
Sorensen, Henry L.	7N/1E-30Q1	Blue Lake Humboldt	14	33, 39, 56
Speier, Lois	5N/2E-36Pl 5N/2E-36Ql	Butler Valley Butler Valley Humboldt	6 6	3 <sup>h</sup> , 39, 56 3 <sup>h</sup> , 39, 56
Sweasey Dam City of Eureka	5N/2E-16G1	Butler Valley Humboldt	6	11, 22, 23, 3 <sup>4</sup> , 39, <sup>4</sup> 1, C-10

## TABLE 8 (Continued)

## INDEX TO SURFACE WATER DIVERSIONS IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

Diversion name	Diversion	Subunit	F	References
and/or awner	focation	and county	Plote 2 sheer no.	Text and appendixes page nos.
	H B & M			
Terral, Anna	2S/7E-3Al	Ruth Trinity	10	36, 40, 57
Thoma, Alfred W.	7N/1E-17E1	Blue Lake Humboldt	4	32, 38, 55, C-11
Timmons, G. F. and Son	6N/1E-11A1 6N/1E-11C1	Blue Lake Blue Lake Humboldt	5 5	31, 55 31, 38, 55
	See also Esser	Mill Pond		
Townsend, Rowena J.	8n/le-32Ml	Little River Humboldt	3	35, C-10
Trinidad, City of	8n/1w-23H1	Big Lagoon Humboldt	3	22, 30, 38, C-13
United States Plywood	7N/3E-5L1	Beaver	14	30
Corporation	7N/3E+5L2 7N/3E-6K1	Beaver Be <b>ave</b> r Humboldt	†  †	30 30, 38
Ward, David S.	See Nylander,	Uno		
Werner, James H.	6N/1W-1B1	Blue Lake Humboldt	5	32, 38, 55
Wiggins, Dr. C. G., et ux.	4N/3E-21C1	Butler Valley Humboldt	7	34, 56

### CHAPTER III. LAND USE

This chapter presents a discussion of the procedures and the tabulated results of a survey of land use in the Mad River-Redwood Creek Hydrographic Unit in 1958. These results, as well as those of the water use data presented in Chapter II, are essential to the determination of future water requirements of the unit. A brief account of historical land use in the unit is presented to supplement the survey data.

## Historical Land Use

Development within the Mad River-Redwood Creek Hydrographic Unit began, as mentioned in Chapter I, as a result of exploration of the coast in search of routes to the Trinity gold fields. The 1850's saw the first urban developments, beginning at Trinidad, and the introduction of agriculture, mainly on the smoother open lands near the coast. The use of lands specifically for recreational purposes was not significant in the unit until many years later.

Urban land use in the unit remained small until the boom which followed World War II. Trinidad and Rlue Lake, the oldest and only incorporated towns, have in recent years been surpassed in area and population by the scattered unincorporated community of McKinleyville. Several smaller communities are located in the coastal area of the unit. These communities, including Crannell, Fieldbrook, Korbel, Mapel Creek, and Orick, owe their existence largely to the lumber industry. In fact, nearly all the urban centers in the unit include this type of industrial land use, as well as residential and commercial types.

In relation to water use, and in acreage of developed land, agricultural land use is the major type in the Mad River-Redwood Creek Hydrographic

Unit. (Lands which are in an essentially undeveloped condition and receive no applied water, even though they supply valuable timber and forage, are mapped as native vegetation for the purpose of this report.) Historically, agriculture has been a significant activity since the 1850's. The remoteness of this region from sources of supply and markets has largely determined the nature of its agriculture. Meeting the local demand for food -- principally meat, dairy products, potatoes, etc. -- as well as feed for livestock, set the pattern of agriculture for some 70 years. After 1900 dairying and beef raising were well established as the primary farm activities.

Improvement of transportation in recent decades has made possible a wider variety of farm products. This trend began after completion of the rail line to Eureka in 1914, but an even greater change came after modern roads made trucking feasible. Most significant of these developments was the rapid expansion, starting about 1940, of the previously small nursery and truck industry. The following tabulation of sales values of these crops in Humboldt County illustrates these changes during the early 1940's.

	1940	1945
Horticultural specialties	\$76,000	\$341,000
Vegetables	23,000	374,000

Though these are Humboldt County totals, the sharp rise is apparent and the new pattern has continued. In recent years, the value of horticultural production has been greater than that of any other farm activity except dairying. In acreage, however, pasture still dominates the agricultural land use, comprising more than 90 percent of the irrigated lands and 70 percent of the dry-farmed lands in 1958.

Irrigation, the largest water using activity, has likewise been very largely a development of the last two decades. As of 1939 there were

only nine irrigated farms and 179 acres irrigated in the Mad River drainage area. The 1958 survey, however, showed that over 3,300 acres in the unit were irrigated.

Recreational activities, mainly hunting and fishing, have been

chere was only a small amount of land use devoted to recreation. Even in the 1958 survey, only about 300 acres were found to be actually so developed. The unit has, nevertheless, an abundance of lands naturally suited to recreational uses. The redwood forests and diverse types of coastal and mountain terrain in the unit are some of the State's finest scenery. Over 10,000 acres of these lands have been set aside as public parks.

## Present Land Use

A detailed description of the survey of land uses conducted in 1958 is described in the following paragraphs. The land uses mapped in this survey fall into four major categories: irrigated lands, dry-farmed lands, urban lands, and recreational lands; and one minor category: naturally high water table lands, such as meadowlands and marshes. Lands not falling into any of these five categories were mapped as "native vegetation." The location and extent of the lands falling into each of these categories are delineated on Sheets 1 through 11 of Plate 2. The acreages of the various land uses within each subunit are presented in Table 9. The values represent gross acreages, and include those nonwater-service areas such as roads, which were too small to be separated from the mapped areas in which they were located.

TABLE 9

LAND USE IN

MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT, 1958
(In acres)

Subunit and	Irrigated	Naturally water table	high Iands	Dry-farmed	Urban		Recreatio	Recreational lands	
	9	Meadowlands	Marsh	2	9	Residential	Commercial	Comp sites	Parks
Beaver Subunit Humboldt County	0	0	0	04	30	8	0	0	0
Big Lagoon Subunit Humboldt County	110	100	140	220	350	99	10	10	1,430
Blue Lake Subunit Humboldt County	2,460	150	80	2,550	2,590	0	10	0	9
Butler Valley Subunit Humboldt County Trinity County	1t 120 0	30	00	560 0	90	100	00	00	00
Little River Subunit Humboldt County	t 270	70	0	160	350	10	0	0	140
North Fork Subunit Humboldt County	0	10	0	3	170	10	0	0	8
Orick Subunit Humboldt County	330	8	0	930	270	0	10	10	8,940
Ruth Subunit Trinity County	01	0	0	8	9	110	80	10	0
Snow Camp Subunit Humboldt County	0	50	0	8.	0	10	0	0	0
County Totals: Humboldt County Trinity County	y 3,290	200	160	3,990	3,820	021 011	ଳ ଝା	8 21	10,570
Hydrographic Unit Total	otal 3,330	500	160	4,010	3,860	230	50	30	10,570

### Methods and Procedures

The location of surface water diversions and the land use survey were accomplished by relating field observations to aerial photographs having a scale of about 1:20,000. The use of stereoscopes was of great assistance in this work. As each surface water diversion was located, it was plotted on the aerial photograph. Following this, the use and extent of each parcel of land were determined, and delineations and annotations made accordingly on the photographs. The hydrographic unit was traversed by automobile as completely as roads and terrain permitted. Where necessary because of poor accessibility, inspections were made on foot.

A system of annotations designed to indicate both the broad types of land use mentioned in the previous section, and subclassifications denoting specific uses, was employed. Agricultural lands were surveyed to determine whether or not parcels were irrigated and what crops were raised. This information was then annotated on the photographs. The crops observed were identified by general crop groups, as well as the specific crops present.

A list of the general groups of crops and the specific crops comprising each group are listed below, with the crops found in the unit in 1958 underlined:

G - Grain and hay crops
Wheat, barley, oats, miscellaneous

P - Pasture

- F Field crops

  Cotton, safflower, flax, hops, sugar beets, corn (field or sweet), Grain sorghums, castor beans, miscellaneous
- Alfalfa, clover, mixed, native, induced high water table native, sudan

### T - Truck

Artichokes, asparagus, beans (green or dry), cole crops, carrots, celery, lettuce, melons, squash, cucumbers, onions, garlick, peas, potatoes, sweet potatoes, spinach, tomatoes, flowers, nursery, bushberries, strawberries, peppers, miscellaneous

### D - Deciduous fruits and nuts

Apples, apricots, cherries, peaches, nectarines, pears, plums, prunes, figs, almonds, walnuts, miscellaneous

An example of an aerial photograph with land use data delineated on it is shown on Page 53.

After completion of the field mapping, the data delineated on the photographs were transferred to copies of U. S. Geological Survey quadrangle maps reproduced at a scale of 1:24,000. This procedure was necessary to bring the delineated areas to a common scale for accurate determination of acreages, since the scale of the aerial photographs utilized varied widely. A series of these maps showing the location of all diversions, and the fields associated with each irrigation diversion, was colored according to the land use categories and was reveiwed by local parties concerned. These maps were then used in the preparation of Plate 2.

Another series of these maps was used in computing the acreages of the land uses. Each delineated area on these maps was manually cut out and was carefully weighed on an analytical balance. These weights were converted to acreages, using ratios determined for the individual maps. This method has proven to be a very expedient and accurate means of area determination where a large number of small parcels are involved.

### Irrigated Lands

Irrigated lands, as designated in this report, include all agricultural lands which receive water artificially. As these lands were noted



Example of Land Use Delineated on Aerial Photograph

### Symbols used on this photograph:

### Irrigated Lands

iP3 - mixed pasture
iP3x - mixed pasture,
partial
irrigation

iPF - pasture, fallow iT6 - carrots

iTl6 - flowers and

nursery

iF6 - corn

### Dry-farmed Lands

nP3 - mixed pasture

nG6 - miscellaneous or mixed hay and grain

nTl2 - potatoes

nT16 - flowers and nursery

n D1 - apples intercropped with strawberries

I2 - new lands being prepared
 for future use

### Urban Lands

UI3 - storage areas UR - residential

### Miscellaneous Lands

NV - native vegetation

NW - water (reservoirs, etc.)

NR2 - meadowland

in the field survey they were identified as such by the symbol "i" as on the sample photograph. The fields of various crops and of "idle" land were identified with specific water sources and the acreages determined accordingly. Idle irrigated lands are defined as lands which were not irrigated in 1958, but had irrigation facilities and had been irrigated within the preceding three years. Fallow irrigated lands are those cultivated lands which have facilities for irrigation and may be irrigated during the year of survey, but at the actual date of survey were only tilled and not planted to a crop.

In 1958, there were 3,340 acres of irrigated lands in the Mad River-Redwood Creek Hydrographic Unit. Of this total, 87 percent were in pasture-type crops, seven percent were in truck crops, mainly nursery, one percent miscellaneous, and the remaining five percent were idle or fallow.

Acreages of irrigated lands within the various subunits are reported in Table 10 by surface diversion. For each irrigation diversion, the acreage of each crop group and, where applicable, the acreage previously irrigated but not cropped in 1958, are tabulated. Any of these lands which received a supplementary supply from ground water are indicated. The acreages to which ground water only was applied are also listed.

On Plate 2, irrigated lands are grouped in just three categories:

(1) those which were cropped and to which water was actually applied during the year of survey; (2) those lands which received only a partial supply of water in 1958; and (3) those which were idle or fallow. The use of ground water is indicated by cross-hatching.

### TABLE 10

### IRRIGATED LANDS IN

### MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

1958 (in ocres)

Olversion or other source serving irrigated lands		Mixad	Field	Truck crops		Daciduous	Tatal	Irrigated <sup>a</sup> idle or	Total
sion locotion	Diversion owner	pasture	crops	Nursery	Other	archard	irrigoted	fallaw	10181
H B & M			Beov	rer Subunit					
			(No irr	igated land	a)				
			Big Lo	goon Subuni					
1W-26L1	George McAlliater	9 56					9 56 <sup>b</sup>		9 56 <sup>b</sup>
/1E-29F1	William McNeil	24 <sup>b</sup>					24 <sup>b</sup>		
/1E-29L1	William McNeil								54
Total Surface W		89°	0	0	0	0	89 <sup>e</sup>	0	89 <sup>c</sup>
Fotal Ground Wa		55					24		5/1
al Big Lagoon S umboldt County		111	0	2	0	0	113	0	113
			Divis	1 -1 - 6 -					
1E-6Q1	Too 'I Donnala	07	Blue	Lake Subuni					
	Joe W. Bugenig	27					27		27
LE-7J1	William Silva	95					95		95
LE-7L1	Mary Pifferini, et al.	38					38	5	40
LE-7R1	Marion J. Horton	1,					4		4
LE-8L1	Manuel Santos	314					34		34
1E-9R1	Earl C. Johnson	5					5		5
E-11A1	G. F. Timmons and Son							45	45
1E-11C1	G. F. Timmons and Son	36					36		36
LE-24G1	A. W. Chriatie	85					85		85
E-5405	A. W. Christie	109					109		109
PE-31H1	Melvin P. Roberts, Jr.	37	6				43		43
W-1B1	Jamea H. Werner			5			5		5
E-17E1	Alfred W. Thoma	27 d					27		27
LE-17R1	T. George Everett	35	3				38 <sup>d</sup>		38ª
LE-17R2	Albert R. and John R. Forrest	43				The public and the pu	43		43
LE-18B1	Henrietta Hartman	105		10			112	4	116
LE-18H1	Edward C. Bott	78					78		78
IE-18K1	Oscar N. Kuntz	55					55		55
ie-18ki	Oscar N. Kuntz	55						1	

lettered footnotes, see last page of table.

### TABLE IO (Continued)

### IRRIGATED LANDS IN

### MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

1958 (in acres)

	or other source irrigated lands	Mixed	Field	Truck	crops	Deciduous	Total lands	Irrigated 0	Tata
Diversion location	Diversion owner	posture	crops	Nursery	Other	orchord	irrigoted	idle or fallow	Toto
H B & M		B	lue Loke :	Subunit (can	tinued)				
7N/1E-27A1	Jess A. Luster	12					12		15
7N/1E-27H1	Jess A. Luster	25					25		25
7N/1E-27R1	Jess A. Luster	14					14		14
7N/1E-28D1	Julius M. Hooven			16			16	68	84
7N/1E-30J1	Hans Dudal	16					16		16
7N/1E-30Q1	Henry L. Sorenson	30					30		30
7N/1E-31C1	John D. Daily	e 7					7 <sup>e</sup>		7 <sup>e</sup>
7N/1E-32F1	Carl Martin	<sub>4</sub> f					4 <sup>f</sup>		ų f
7N/1E-34A1	Carroll Hauser	21					21		21
7N/1W-25J1	Albert C. Hartman			36			36	8	1,1,
7N/1E-8R1 (Little River Subunit)	Uno Nylander Cottage Gardens Company, Inc., lesse	ee		36			36		36
Total Surface V		939	9	103	0	0	1,051	127	1,178
Total Ground Wa		1,162	9	53	43	0	1,267	15	1,282
Total Blue Lake St Humboldt County		2,101	18	156	43	0	2,318	142	2,460
			Buster	Volley Subu	nit.				
3N/3E-3F1	Roy Fulton	2	Batter	Volley Subu			2		2
4N/3E-21C1	Dr. C. G. Wiggins, et ux.	10					3		10
5N/2E-36P1 5N/2E-36Q1	Lois Speier	95				14	109	_	109
Total Surface	Water Supply	108	0	0	0	14	122	0	122
Total Ground Wa	ater Supply	0	0	_0	_1	_0	_1	_0	_1
Total Butler Valle Humboldt County	ey Subunit	108	0	0	1	14	123	0	123
			Little	River Subun	si t				
7N/1E-18B1 (Blue Lake Subunit)	Henrietta Hartman	5		13			18		18
7N/1E-8C1	John Christie	80					80		80
7N/1E-8E1	Dr. Sanford M. Moose	15					15		15
7N/1E-8F1	Dr. Sanford M. Moose	99					99		99
7N/1E-8G1	John E. Balke	12			Ł,		16	14	20

For lettered footnotes, eee last page of table.

### TABLE 10 (Continued)

### IRRIGATED LANDS IN

### MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

1958 (in ocres)

Diversion or other source earving irrigoted lands		Mixed	Field	Truck	crops	Deciduous	Total	Irrigoted 0	Total
ersion location	Diversion owner	posture	crops	Nursary	Other	orchard	ırrigated	follow	
H B & M		L	ittle Rivs	r Subunit (c	ontinued)				
/1E-8G2	John E. Balke	8	1				8		8
/1E-8R1	Uno Nylander Cottage Oardens Company, Inc., lessee		_	18		_	18		18
Total Surface W	ater Supply	219	0	31	4	0	254	14	258
Total Ground Wa	iter Supply	14	_0	0	0	0	14	0	14
tal Little River Rumboldt County	Subunit	233	0	31	l <sub>4</sub>	0	268	1,	272
			Nort	h Fork Subu	nit				
				rrigated la					
			(		,				
				Orick Subunit					
N/1E-55KI	Robert S. Davison	68					68		68
N/1E-27Q1	Arcata Redwood Company Hill Davis	29					29		29
Total Surface k		97	0		_ 0	0	97	0	97
Total Ground Wa		236	0	0	0	<u> </u>	236	0	236
tal Orick Subuni		333	0	0	0	0	333	0	333
Humboldt County									
			F	} Ruth Subunit					
7/7E-2F1	Aubert N. and Mary Lou Jeans	14					L.		ų
5/7E-3A1	Anna Terral	14					4		Ц
/7E-4C1	Earl P. Dillon	7				5	9	14	23
/TE-23J1	Roy Gallagher and Glen Rector	9					9		9
Total Surface V		24	0		0	2	26	14	40
Total Ground Wa		0	0	o	0	_3	3	0	3
otal Ruth Subunit Trinity County		54	0	0	0	5	29	14	43
			Sno	l w Comp Sut	ounit				
				rrigated la					
			(	1					

or lettered footnotes, see last page of table.

### TABLE 10 (Continued)

### IRRIGATED LANDS IN

### MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

1958 (in ocres)

	r other saurCe rigated lands	Mixed	Field	Truc	k crops	Deciduous	Tatol	Irrigoted a	Total
Diversian location	Diversion location Diversion owner		crops	Nursery	Other	orchard	ırrigated	follow	
			<u>s</u>	UMMARY					
Lands Irrigated b		1,434	9	55	1,1,	0	1,542	15	1,557
Trinity	County	0	0	0	0	3	3	0	3
Lands Irrigated b		1,452°	9	134	14	14	1,613 <sup>c</sup>	131	1,744
Trinity	County	5,1	0	0	0	5	26	14	40
Total Mad River-Redv Hydrographic Unit	wood Creek	2,910	18	189	48	19	3,184	160	3,344

Footnotes:

(a) Lands ordinarily irrigated, but idle or fallow in 1958

(b) Received supplemental supply from ground water

(c) 80 acres received supplemental supply from ground water

(d) 15 acres received partial irrigation

(e) 5 acres received partial irrigation

(f) Acreage reported is alfalfa hay and pasture



Rhododendron culture near Dow's Prairie

AGRICULTURAL LAND USE



Irrigated pasture Little River Subunit

### Naturally High Water Table Lands

In addition to the lands which receive applied water as described above, there are lands supporting vegetation which utilizes water from a naturally high water table, such as mountain meadows or certain lands adjacent to lakes and streams. These lands are divided into two groups:

"meadowlands" where the water table is normally below the surface; and

"marsh" which is under water much of the year, and supports a growth of tules, cattails, bullrushes, and similar vegetation.

These two groups are designated "naturally irrigated meadowlands" and "marsh or swamp" on Plate 2.

### Dry-farmed Lands

Dry-farmed lands are those lands normally in crop but which do not receive applied water. This category includes all lands so farmed, whether or not a crop is produced in the year of survey. Dry-farmed lands are called "idle" if entirely uncultivated in the year of survey, and "fallow" if tilled but without a crop. Lands which had been idle for more than three years and appeared to have reverted to native vegetation were so mapped.

It should be noted that the term "dry-farmed" as used herein refers to the farming practice on these lands, and not to a lack of soil moisture.

Since noncultivated rangelands are usually indistinguishable from other lands with native cover not used for grazing purposes, no attempt was made to segregate them. Both types are included in native vegetation. Water use in both cases is essentially the same, and is dependent upon precipitation.

### Urban Lands

Urban lands include the total areas of cities, towns, small communities, and industrial plots which are large enough to be delineated. Also included are parks, golf courses, racetracks, and cemeteries within or near urban areas. The reported acreages of urban land use represent gross delineations, including streets and vacant lots, and are therefore not necessarily fully developed at the present time. In this survey the boundaries of urban communities were delineated to include all lands with a density of one house or more per two acres.

### Recreational Lands

Recreational lands were mapped on aerial photographs in the field in four categories: (1) residential, (2) commercial, (3) camp and trailer sites, and (4) parks. Recreational "residential" lands include permanent and summer home tracts within primarily recreational areas. The estimated density of homes per acre was also indicated in the course of the survey. Recreational "commercial" lands include those containing motels, resorts, hotels, stores, restaurants, and similar commercial establishments in primarily recreational areas. Lands mapped in the "camp and trailer sites" category include those areas so used within primarily recreational areas but outside the boundaries of public parks. The entire area within the boundaries of parks was included in the "parks" category without regard to the extent of development thereon. Obviously, nearly all the mountainous, seashore, and water surface areas are suitable for some use such as hunting, fishing, hiking, picnicking, and other recreational activities of this nature. For the purpose of this land use survey, however, except for parks, consideration was given only to those lands where some fairly intensive development requiring water service was located.

Right: Gravel plant near Blue Lake



Below: Lumber Mill at Korbel

INDUSTRIAL LAND USE



The recreational lands are tabulated by the above four categories in Table 9. However, all recreational lands are indicated alike on Plate 2. In the case of officially designated recreational lands, the areas delineated and tabulated are not necessarily fully developed. Prairie Creek Redwoods State Park is the most notable example of this.

### Native Vegetation

Lands which are essentially in a native state, and not included in any of the above categories, as well as scattered residences and other isolated uses too small to be delineated, were mapped as "native vegetation." However, in addition to the lands so mapped, the total acreage reported in this native vegetation category includes lands which were mapped as water surface and farm building areas, including dairies, feed lots, etc. The total of all these lands was some 571,600 acres, or about 96 percent of the Mad River-Redwood Creek Hydrographic Unit, in 1958. Most of these lands, even in their native state, are used for commercial timber production, livestock range, and recreational activities such as fishing, hunting, hiking, and picnicking.



### CHAPTER IV. LAND CLASSIFICATION

Calculations of future water requirements will be based in a large part on a classification of lands with regard to their potential for irrigated agriculture and recreational development. The results of such a land classification conducted in the Mad River-Redwood Creek Hydrographic Unit are presented in this chapter.

Lands were not classified in this survey with respect to their potential for urban development. The use of lands for urban purposes is closely related to population at any given time, and it is planned to defer designation of these lands until estimates of population and related economic studies are made in connection with determinations of future water requirements.

The former Division of Water Resources made a reconnaissance classification of lands of the State which was reported in State Water Resources Board Bulletin No. 2, "Water Utilization and Requirements of California," June 1955. In that report, the area discussed herein is contained in the "Mad River" and "Redwood Creek" units. The data on agricultural lands reported herein are in considerably greater detail than the information in Bulletin No. 2. This bulletin also includes additional data on classification of potential recreational lands not contained in Bulletin No. 2. This report is likewise more detailed as to land classification than Bulletin No. 58, "Northeastern Counties Investigation," which covers the portion of the unit within Trinity County.

Results of the land classification survey conducted in the Mad River-Redwood Creek Hydrographic Unit in 1959 are presented pictorially on Plate 3, "Classification of Lands," Sheets 1 through 11. The total acreages of each classification are enumerated by subunits in Table 12.

### Methods and Procedures

The general methods and procedures used in field mapping, area determinations, and tabulation of acreages were essentially the same as those described for the land use survey in Chapter III. An example of land classification delineations on an aerial photograph is shown on Page 69.

The standards used in the classification of lands are given in detail in Table 11.

### Table 11

### LAND CLASSIFICATION STANDARDS

Land class:
symbols: Characteristics

### Irrigable Lands

- V These lands are level or slightly sloping and vary from smooth to hummocky or gently undulating relief. The maximum allowable slope is six percent for smooth, reasonably large-sized bodies lying in the same plane. As the relief increases and becomes more complex, lesser slopes are limiting. The soils have medium to deep effective root zones, are permeable throughout, and free of salinity, alkalinity, rock or other conditions limiting crop adaptability of the land. These lands are suitable for all climatically adapted crops.
- H These are lands with greater slope and/or relief than those of the V class. They vary from smooth to moderately rolling or undulating relief. The maximum allowable slope is 20 percent for smooth, reasonably large-sized bodies lying in the same plane. As the relief increases and becomes more complex, lesser slopes are limiting. The soils are permeable, with medium to deep effective root zones, and are suitable for the production of all climatically adapted crops. The only limitation is that imposed by topographic conditions.
- M These are lands with greater slope and/or relief than those of the H class. They vary from smooth to steeply rolling or undulating relief. The maximum allowable slope is 30 percent for smooth, reasonably large-sized bodies lying in the same plane. As the relief increases and becomes more complex, lesser slopes are limiting. The soils are permeable, with medium to deep effective root zones, and are suitable for the production of all climatically adapted crops. The only limitation is that imposed by topographic conditions.

### Table 11 (Continued)

### LAND CLASSIFICATION STANDARDS

and class:		
symbols:	Characteristics	

Any variations from the foregoing, as defined, are indicated by use of one or more of the following symbols:

- w Indicates the presence of a high water table, which in effect limits the present crop adaptability of these lands to pasture crops. Drainage and a change in irrigation practice would be required to affect the crop adaptability.
- s Indicates the presence of an excess of soluble salts or exchangeable sodium in slight amounts, which limits the present adaptability of these lands to crops tolerant to such conditions. The presence of salts within the soil generally indicates poor drainage and a medium to high water table. Reclamation of these lands will involve drainage and the application of small amounts of amendments and some additional water over and above crop requirements in order to leach out the harmful salts.
- ss Indicates the presence of an excess of soluble salts or exchangeable sodium in sufficient quantity to require the application of moderate amounts of amendments and some additional water over and above crop requirements in order to effect reclamation.
- h Indicates very heavy textures, which in general make these lands best suited for production of shallow-rooted crops.
- Indicates fairly coarse textures and low moisture-holding capacities, which in general make these lands unsuited for the production of shallow-rooted crops because of the frequency of irrigations required to supply the water needs of such crops.
- p Indicates shallow depth of the effective root zone, which in general limits use of these lands to shallow-rooted crops.
- r Indicates the presence of rock on the surface or within the plow zone in sufficient quantity to prevent use of the land for cultivated crops.

### Urban Lands

UD - The total area of cities, towns, and small communities presently used for residential, commercial, recreational, and industrial purposes. Such lands lying within areas to be inundated by projects authorized for construction are excluded.

### Table 11 (Continued)

### LAND CLASSIFICATION STANDARDS

Land class:

symbols: Characteristics

### Recreational Lands

- RR Existing and potential permanent and summer home tracts within a primarily recreational area. The estimated number of houses, under conditions of full development, is indicated by a number in the symbol, i.e., RR-3 is suitable for three houses per acre.
- RC Existing and potential commercial areas which occur within a primarily recreational area and which include motels, resorts, hotels, stores, etc.
- RT Existing and potential camp and trailer sites within a primarily recreational area.
- RF Existing county, state, federal, and private parks, race-tracks, and fairgrounds.

### Miscellaneous Lands

- F Presently forested lands, or lands subject to forest management, which meet the requirements for irrigable land but which, because of climatic conditions and physiographic position, are better suited for timber production or some type of forest management program rather than for irrigated agriculture.
- Vm Swamp and marshlands which are covered by water most of the time and usually support a heavy growth of phreatophytes.
  - N Includes all lands which fail to meet the requirements of the above classes.

### Major Categories of Land Classes

The lands mapped are grouped into four major categories: (1) irrigable lands, (2) urban lands, (3) recreational lands, and (4) miscellaneous lands. These categories are described in detail in the following paragraphs.



Example of Land Classification Delineated on Aerial Photograph (See Table 11, pages 66-68, for symbol explanation)

### Irrigable Lands

Irrigable lands are grouped in appropriate classifications according to their suitability for development under irrigated agriculture and their crop adaptability. Presently irrigated lands are included within these classifications, but urban lands and recreational lands are not classed as to irrigability. The time element with respect to when the lands might be developed did not enter into these determinations, except that suitability for irrigated agriculture was necessarily considered in light of present agricultural technology.

There are many factors which influence the suitability of land for irrigation development. Since soil characteristics and the physiography of the landscape are the most stable of these factors, they were the only ones considered in the survey in classifying lands as to their irrigability. The characteristics of the soil were established by examination of road cuts, ditch banks, and the material from test holes, together with observations of the type and density of native vegetation and crops. Representative slopes throughout the area were measured with a clinometer. Other aspects, such as those economic factors related to the production and marketing of climatically adapted crops, the location of lands with respect to a water supply, and climatic conditions, were not considered in the basic classification. These latter factors are very important in estimating the nature of future cropping patterns and practices, and will be given due consideration when estimates are made of future water requirements.

### Urban Lands

It is recognized that future urban expansion will encroach upon some of the irrigable lands. The location and extent of this type of development is a function of many variables. Because this land classification survey

# CLASSIFICATION OF LANDS IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

(In acres)

			Irri	Irrigable ogr	agricultural lands	lands									Miscellopeous	Snoe
Subunit	Sr	Smooth 1	lying	1 =	guidols		sloping		Urban lands		Reci	Recraotional londs	londs		londs	1s
County	>	>	3 >	I	Нр	Σ	Мр	Total	00	RR	RC	RT	dd	Totol	ů.	٤ >
Beaver Humboldt County	150	0	0	110	0	10	50	590	30	50	0	0	0	20	5,630	0
Big Lagoon Humboldt County	850	0	100	1,550	500	0η9	0	3,340	350	8	10	10	1,430	1,530	6,870	170
Blue Lake Humboldt County	7,040	250	150	5,020	9	2,600	0	15,100	2,590	8	8	10	017	8	2,900	8
Butler Valley Humboldt County Trinity County	260	00	80	930	00	110	8 9	1,090	90	9 8	0 0	9 8	00	20	13,110	00
Subunit Total	560	0	30	700	0	110	50	1,120	09	30	0	99	0	8.	13,210	0
Little River Humboldt County	510	0	70	860	0	10	0	1,450	350	8	0	0	140	160	3,370	0
North Fork Rumboldt County	8	0	10	8	0	190	0	310	170	8	0	0	8	9	1,630	0
Orick Humboldt County	1,280	0	8	80	10	10	0	1,470	270	0	10	10	8,940	8,960	8,000	0
Ruth Trinity County	560	310	0	140	10	0	0	720	30*	930	20	570	0	1,520	780	0
Snow Camp Rumboldt County	8	0	90	0	0	30	0	170	0	10	0	8	0	30	5,480	0
County Totals																
Humboldt County	10,200	250	200	8,380	250	3,600	041	23,220	3,820	210	04	8.	10,570	10,910	146,990	160
Trinity County	560	310	0	170	10	0	0	750	30*	950	81	28	0	1,560	880	0
Hydrographic Unit Total	10,460	260	200	8,550	560	3,600	047	23,970	3,850*	1,160	8	680	10,570	12,470	47,870	160

\* Excludes 10 acres with ' Ruth Reservoir which were in urban development in 1958.

is an inventory of relatively unchanging physical conditions, no attempt was made to locate the areas of urban encroachment. Therefore, only those lands devoted to urban uses in 1958 are designated as "urban" lands.

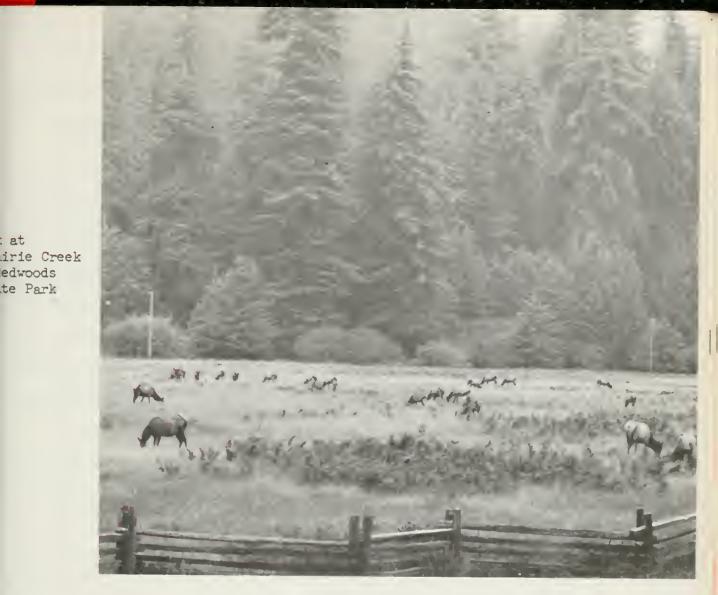
### Recreational Lands

Present trends indicate an expanding rate of use and demand for recreational facilities throughout the State. In view of these trends and the ever-increasing population, it is recognized that there will be a demand for substantial land areas for recreational purposes. This is particularly true of the mountainous and coastal regions where this type of development is expanding rapidly at the present time.

Generally speaking, all mountainous and coastal lands are suitable for some recreational use such as hunting, fishing, and similar outdoor activities. However, for purposes of this survey, lands classified for recreational use were limited to those which are now, or may in the future, be used intensively for permanent and summer home tracts, camp and trailer sites, and parks outside of urban areas. These are lands requiring intensive water service.

Primary considerations for classification of home tracts and camp and trailer sites were such physical factors as soil depth, slope, and rockiness; such aesthetic values as view, nearness to lakes, streams or seashore, or density and type of forest canopy suitable for the respective uses; and the plans of federal and state forest officials. An important factor in locating potential camp and trailer sites is the availability of a water supply. Isolation from existing roads did not influence classification.

The total areas of existing federal and state parks, rather than the specific areas of potential intensive development therein, are included with the recreational lands on Plate 3. For other parks, only the areas



at

edwoods te Park



Ruth Dam and Reservoir presently developed to intensive recreational use are delineated. No attempt was made to predict where additional park developments will take place.

### Other Lands

Irrigable forest and range lands are those lands having physical characteristics which make them suitable for irrigation development, but due to physiographic position, climatic conditions, and factors associated with their present utilization, they were classified as being best suited to remain under forest or range management.

Swamp and marshlands are those which generally have water standing on them and usually support a heavy growth of tules or other phreatophytes.

### CHAPTER V. SUMPARTY

Unit, basic data on land and water use, classification of lands, and a minimum of analysis of these data. Field surveys to obtain the data were conducted during 1958 and 1959 as part of a comprehensive inventory of water resources and requirements of California under authorization of the 1956 State Legislature. Determinations of future water requirements, the relationships of local water resources to these requirements, and the excess or deficiency of such resources within each watershed, which constitute the basic objectives of the investigation, will be made at a later stage.

This hydrographic unit comprises a 929-square-mile (594,410-acre) area in Humboldt and Trinity Counties. It comprises the watersheds of Mad River, Redwood Creek, and other smaller streams between them. The interior of the unit is mostly rugged, traversed from end to end by the narrow valleys of the two major streams. The rough terrain begins near the coast and rises to nearly 6,000 feet near the head of Mad River. The one significant variation to this pattern is a number of small coastal plains and/or benches.

Timber products constitute by far the largest industry and resource of the unit. This industry had its beginning in the 1850's, but has experienced its greatest growth since World War II. Agriculture is the second largest business, with dairy and horticultural products being the principal sources of farm income. The portion of farmlands under irrigation has increased from a negligible quantity to nearly half the cultivated acreage in the last 20 years. Of the land irrigated in 1958, over 90 percent was in pasture, and the bulk of the remainder in truck crops. Mineral production (mainly sand and gravel), recreation, and commercial fishing are the other enterprises of

significance in the unit. The largest concentration of population within the unit is the unincorporated community of McKinleyville. Smaller urban areas are located at Blue Lake, Crannell, Fieldbrook, Maple Creek, Orick, and Trinidad, the oldest town in the Humboldt Bay district.

The information and data presented in this bulletin comprise:

- o a brief description of the area, its climate, resources, and past and present development
- a tabulation describing the 68 systems used to divert surface waters, including locations, names of owners and sources, data on histories, apparent water rights, purposes, and extent of use in 1958
- o a tabulation of quantities of water diverted by 40 of these diversion systems during 1958
- o an estimate of consumptive use of water in 1958
- o a tabulation of the acreages of various land uses in 1958
- a tabulation of acreages of various crops irrigated from each diversion and with ground water in 1958
- o a tabulation of the classes of lands suitable for future irrigation and recreational uses.

### Water Use

The results of a survey of surface water diversions within the unit in 1958, comprising an essential part of this report, were presented in Chapter II. The following paragraphs summarize these results.

There were 68 diversions of water from surface streams located in the unit in 1958, 65 of which were used. Of the total, 44 normally serve irrigation purposes, and of these only 42 were used in 1958. Small numbers of diversions are used for other purposes as follows: municipal-domestic, 8; industrial, 10; hydroclectric power, 4; fish culture, 1; and export for municipal use outside the unit, 1.

Surface water, in addition to supplying a little over half the irrigated lands of the unit, also provides a very good part of the supply for the numerous dairies, sawmills and log ponds. It also provides municipal and domestic supply for about a fifth of the unit's population, as well as the City of Eureka outside the unit. Ground water, on the other hand, meets some four-fifths of the domestic needs, mostly from privately owned wells, nearly half the irrigation needs, and a somewhat lesser part of the industrial supply.

Irrigation accounts for the major part of the consumptive use, municipal and industrial uses for somewhat lesser amounts; and some uses, such as hydroelectric power generation, are virtually nonconsumptive. The total consumptive use of applied water in the unit in 1958 is estimated to have been 4,500 to 5,000 acre-feet.

Most of the 68 diversions in the unit are based on riparian rights or on appropriative rights obtained by application to the State since enactment of the California Water Commission Act in 1914. As of October 1, 1960, there were a total of 88 valid applications pertinent to surface waters within the unit. Permits or licenses had been granted for 80 of these applications, while the other 8 were either pending or incomplete.

### Present Land Use

A second portion of the investigation reported herein is the survey of the uses of land in the unit in 1958, details of which are described in Chapter III.

The acreages of land devoted to various uses in the Mad River-Redwood Creek Hydrographic Unit, as indicated by the 1958 survey, which are tabulated in detail in Tables 9 and 10, are summarized as follows:

Type of Use	Humbold	it County	Trini	ty County	Hydrogr	aphic Unit*
Agricultural Lands irrigated in 1958	3,150		30		3,180	
Lands usually irrigated but idle or fallow in 1958	140		20		160	
Meadowlands Dry-farmed	500 3,990	7,780	0 20	60	500 4,010	7,840
Recreational Residential Commercial Campsites Parks	120 30 20 10,570	10,740	110 20 10 0	140	230 50 30 10,570	10,880
Urban		3,820		40		3,860
Native vegetation		470,570		101,100		571,670
Marshlands		160		0		160
TOTALS		493,070		101,340		594,410

<sup>\*</sup>The relative amounts of each of these types of use are shown in Figure 1, page 79.

Of the 3,340 acres of land under irrigation, 160 were idle, 1,540 were irrigated with ground water, and 1,640 with surface water.

### Land Classification

The third survey covering the Mad River-Redwood Creek Hydrographic Unit was the classification of lands as to suitability for irrigated agriculture and recreational development. This survey was discussed in Chapter IV, and is reviewed briefly below.

The results of the land classification survey conducted for this investigation, which are tabulated in detail in Table 12, are summarized below:

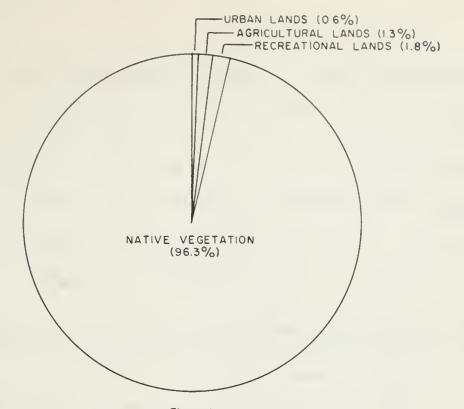


Figure 1

# 1958 LAND USE IN MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

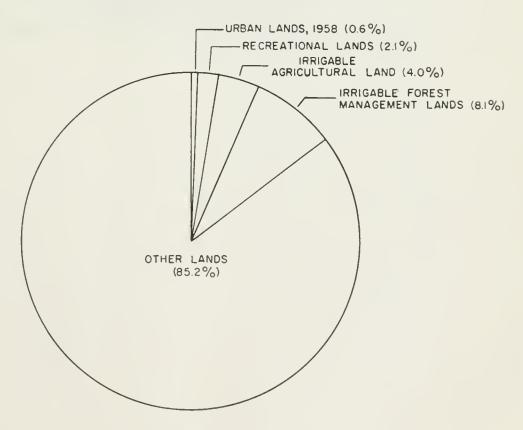


Figure 2

CLASSIFICATION OF LANDS IN MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

Classification groups	Humboldt County	Trinity County	Hydrographic Unit
Irrigable agricultural lands	23,220	750	23,970
Recreational lands	10,940	1,560	12,500
Developed urban lands	3,820	30 <del>**</del>	3 <b>,</b> 850**
Irrigable forest management lands	46,990	880	47,870
Other lands	408,090	98,120	506,210
TOTALS	493,070	101,340	594,410

<sup>\*</sup>The relative amounts of each of these groups are shown in Figure 2, Page 79.
\*\*Does not include 10 acres of 1958 urban land use now within Ruth Reservoir

Some significant concentrations of certain classes are noted below:

Over 70 percent of the presently developed urban lands are in Blue Lake Subunit, adjacent to the Humboldt Bay-Eureka area.

Over 60 percent of the irrigable agricultural lands of the unit are in the Blue Lake Subunit.

O About 80 percent of residential and campsite recreational lands are in the Ruth Subunit.

### APPENDIX A

STATEWIDE WATER RESOURCES
AND WATER REQUIREMENTS STUDIES



### APPENDIX A

## STATEWIDE WATER RESOURCES AND WATER REQUIREMENTS STUDIES

California's major water problem today is that of development and

delivery of supplemental water supplies to meet increasing water requirements throughout the State. The problem involves (1) the regulation of seasonal and cyclic fluctuation of streamflow to meet demand schedules in the areas of origin, and (2) the transmission of regulated surplus flows over long distances to areas of deficiency. The development and long-distance transfer of water are currently accomplished by such major facilities as the federal Central Valley Project and the Colorado River Aqueduct of The Metropolitan Water District of Southern California. In the future, such development and transfer of water will be considerably broadened by the presently authorized State Water Facilities, by future projects of the California Water Resources Development System, and by additions to the Central Valley Project.

Consumptive water requirements of the State on a basin wide basis were estimated in State Water Resources Board Bulletin No. 2, "Water Itilization and Requirements of California," June 1955. The Trinity County portion of this unit was also studied in the "Northeastern Counties Investigation," Bulletin No. 58, June 1960. However, to provide for local water needs while considering specific export projects, more detailed information must be made available on present and projected future water requirements of the areas in which the projects are to be built. This will necessitate the considerably more detailed collection and analysis of data on hydrology, land use and land capability, and economics.

Recognizing that additional information is needed if the water needs of areas of origin are to be adequately protected in large-scale water development projects, the 1956 Legislature authorized an investigation to determine the water resources and water requirements of the respective watersheds in the State. The legislation authorizing this investigation, codified in Section 232 of the Water Code, is as follows:

"232. The Legislature finds and declares that in providing for the full development and utilization of the water resources of this State it is necessary to obtain for consideration by the Legislature and the people, information as to the water which can be made available for exportation from the watersheds in which it originates without depriving those watersheds of water necessary for beneficial uses therein. To this end, the department is authorized and directed to conduct investigations and hearings and to prepare findings therefrom and to report thereon to the Legislature at the earliest possible date with respect to the following matters:

- (a) The boundaries of the respective watersheds of the State and the quantities of water originating therein;
- (b) The quantities of water reasonably required for ultimate beneficial use in the respective watersheds;
- (c) The quantities of water, if any, available for export from the respective watersheds;
- (d) The areas which can be served by the water available for export from each watershed; and
- (e) The present use of water within each watershed together with the apparent claim of water right attaching thereto, excluding individual uses of water involving diversions of small quantities which, in the judgment of the Director of Water Resources, are insufficient in the aggregate to materially affect the quantitative determinations included in the report.

"Before adopting any findings which are reported to the Legislature, the department shall hold public hearings after reasonable notice, at which all interested persons may be heard."

(Added by Stats. 1956 (Ex. Sess.), Ch. 61; amended by Stats. 1959, Ch. 2025.)

For purposes of this investigation, the State has been divided into 12 major hydrographic areas. These areas, in turn, have been

subdivided into hydrographic units generally comprising watersheds of individual rivers. These watersheds will be field surveyed in some detail, and, where previous detailed studies have been made, the information will be brought up-to-date. Water resources and water requirements will be determined and reported in a bulletin for each of the hydrographic areas. Since many years are required to gather sufficient data for adequate analysis of water resources and water requirements, surveys of present land and water use will be made, and the data published separately for each of the hydrographic units. This procedure will make the land and water use data available sooner than would otherwise be possible. Bulletin No. 94-7, "Land and Water Use in Mad River-Redwood Creek Hydrographic Unit," is the seventh of a series reporting the results of these surveys.

At a future date, estimates, largely based on the land and water use surveys, will be made of quantities of water reasonably required for future beneficial use in each watershed. The quantity of water potentially available for export from each watershed will be determined after allowances are made for the satisfaction of the local requirements and prior rights to divert water to other areas. For those watersheds in which no exportable water is available, the water supply deficiency will be determined. These estimates will be published as they become available, in such form as to make possible a county-by-county determination.

The calculations of future water requirements will be based, in part, on predicted future land uses derived from land classification surveys, economic studies, population forecasts, industrial and agricultural development, and recreational needs. Agricultural water requirements will be based on unit water use by the various predicted crop types; urban and recreational requirements on per capita water use values; fish

and wildlife requirements on minimum streamflow needed or water demands for wildlife area; and industrial water requirements on measured water deliveries to various types and sizes of industries now existing. In forecasting future industrial development, water quality problems will be given full consideration.

Water resources will be determined from records of all stream gaging stations, including new stations which were established for this and other investigations of the department. The new stations were generally constructed on streams which originate in the smaller watersheds for which runoff data are necessary, but for which no data have been available. One new stream gaging station requested for use by this investigation was added to the existing network of stations in the Mad River-Redwood Creek Hydrographic Unit. This station was installed on North Fork Mad River near Blue Lake in October 1957.

Determination of the sequence and approximate dates of future projects, as well as their individual engineering features, is of vital importance in proper planning to meet California's growing water demand. In order to have a construction schedule in advance of the need, staging studies have been initiated. These studies, the collection, processing, and publication of basic data such as presented herein, determination of the water resources and future water requirements of the State, and certain other closely related studies now constitute the department's Water Requirements and Project Staging Program.

### APPENDIX B

REFERENCES AND REPORTS ON RELATED INVESTIGATIONS



### APPENDIX B

### REFERENCES AND REPORTS ON RELATED INVESTIGATIONS

Prior reports and documents reviewed in connection with the investigation of land and water use in the Mad River-Redwood Creek Hydrographic Unit include the following:

- Andrews, R.W. "Redwood Classic." 1958.
- Bancroft, Hubert H. "History of the Northwest Coast." Volume 1.
- California State Chamber of Commerce. "Economic Survey of California and Its Counties." 1958.
- California State Department of Fish and Game. "The Commercial Fish Catch of California." Bulletins, 1946-1958.
- ---. "The Marine Fish Catch of California for 1955 and 1956."
  Bulletin 105.
- California State Department of Natural Resources, Division of Mines.
  "Mineral Information Service Bulletin." Annual production
  issues, 1950-1961.
- ---. "Geologic Reconnaissance of the Northern Coast Ranges and Klamath Mountains, California With a Summary of the Mineral Resources." Bulletin 179. 1960.
- California State Department of Water Resources. "The California Water Plan." Bulletin No. 3. May 1957.
- ---. "State Water Right Applications for Unappropriated Water, Assignment Thereof, Reservations for Counties of Origin, and Other Related Matters." January 1959.
- ---. "Northeastern Counties Investigation." Bulletin No. 58.
  June 1960.
- ---- "Progress Report on North Coastal Area Investigation."
  May 1961.
- California State Water Resources Board, "Water Resources of California." Bulletin No. 1. 1951.
- ---. "Water Utilization and Requirements of California."
  Bulletin No. 2. 1955.
- California, University of, Agricultural Extension Service.
  Bulletin No. 748.

- Coy, Owen C. "The Humboldt Bay Region, 1850-1875." 1929.
- Hamm, Lillie E. "History and Business Directory of Humboldt County." 1890.
- Hoener, Edgar P. "Timberman." 1950-1956.
- Hoover, M. B. "Historic Spots in California (Counties of the Coast Range)." 1937.
- Melendy, Howard B. "One Hundred Years of the Redwood Lumber Industry, 1850-1950." 1952.
- Miller Freeman Publications. "Timberman." 1957-1960.
- ---- "Lumberman." 1950-1960.
- ---- "Directory of Forest Products Manufacturers, 1950-60."
- United States Department of Commerce, Bureau of the Census.
  "Census of Agriculture, 1935." Volumes 1 and 2.
- ---. "Irrigation of Agricultural Lands, 1940."
- ---- "Census of Agriculture, 1945." Volume 1.
- United States Department of the Interior. "Eighth Census, Statistics of Agriculture, 1860."

APPENDIX C

LEGAL CONSIDERATIONS

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### LEGAL CONSIDERATIONS

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### APPENDIX C

### LEGAL CONSIDERATIONS

There are set forth in the following paragraphs brief general tatements with respect to the California law of water rights to supplement and to provide a background for information on water rights contained in hapter II. Also included is a tabulation of currently active applications appropriate water within Mad River-Redwood Creek Hydrographic Unit filed ith the State Water Rights Board.

### California Water Rights

In California, water rights convey only the right to use water.

ntil absolute possession of water is acquired by some artificial means,

o one owns water. However, the owner of water rights is entitled to

njoy them without interference by other users who have rights which are

nferior to his.

Five kinds of water rights are recognized in California. These re riparian, overlying, appropriative, prescriptive, and pueblo. Riparian ights attach to surface water and water flowing in known and definite ubterranean channels, while overlying rights attach only to underground ater. Appropriative and prescriptive rights may be acquired in either urface or underground waters. Pueblo rights are now exercised in alifornia only by the cities of Los Angeles and San Diego, each of which as a paramount right to satisfy its full needs from the stream system of aters flowing by the former Mexican pueblo from which each sprang.

All water rights, both to surface and to underground water, are ubject to the doctrine of reasonable beneficial use expressed in Section 3 f Article 14 of the California Constitution, and Water Code Sections 100 and 101. This doctrine limits water rights to the quantity of water

reasonably required for beneficial use and prohibits waste, unreasonable use, and unreasonable methods of use or diversion.

### Riparian Rights

A riparian right entitles the owner of lands which border or front on a watercourse to take water therefrom for use on such lands within the same watershed. However, the rights of the owner of riparian land are limited to the reasonable beneficial use of the natural flow of water which passes his land. Riparian rights pass with the title to the land, unless expressly reserved or excepted from the interests transferred, and are not gained by use or lost by mere nonuse. Although the land must be contiguous to the watercourse, the length of the frontage is not determinative of the rights; a large tract with a small frontage on a stream may be riparian to the stream. But the original grant determines the character of the land, and only the smallest contiguous tract held under a single title retains riparian rights.

A riparian owner has no right to any specified amount of the water of a stream as against other riparian owners. He has rights only to a reasonable share from the stream — a correlative right which he shares mutually with other riparian owners. In the event of insufficient water for all, the available supply must be apportioned, except that an upper riparian owner may take the whole supply if necessary for domestic use. As against appropriators, the riparian owner has the paramount right to all the water of the stream which he can put to reasonable beneficial use, but that is the extent of his rights, and the appropriator can take the surplus.

Riparian rights do not authorize use of water on nonriparian land, nor do they permit the seasonal storage of water. Neither do they prevent temporary appropriation by others of water not presently needed for use on riparian land.

A parcel of land becomes nonriparian when severed from land bordering the stream, unless the riparian rights are reserved for the severed parcel
by the grantor. Riparian rights may be destroyed when purportedly transferred
apart from the land by grant, contract, or condemnation, and may be impaired
or lost through prescription.

### Overlying Rights

Owners of lands overlying a common underground water supply have the right to withdraw water for reasonable beneficial use on their overlying lands. Such overlying rights are analogous to riparian rights, in that both are based on ownership of land, and the rights of each overlying owner are mutual and correlative to the rights of all other owners. In the case of insufficient water to fully supply the requirements of all, the available supply must be equitably apportioned.

Overlying rights do not include use of water on nonoverlying land. However, surplus water not presently required for beneficial use on overlying land, and which may be withdrawn without creating an overdraft on the ground water supply, may be appropriated for use on nonoverlying land. But the overlying rights are paramount and all appropriative rights are subject to the future requirements of overlying land.

### Appropriative Rights

An appropriation of water is any taking of water for other than riparian or overlying uses, whether such taking is from the underground by wells or from surface streams by direct diversion or storage. An appropriator, in the legal sense, is one who initially takes water without possessing rights which are based on the ownership of land. As between appropriators, the one first in time is first in right. A prior appropriator may take all the water

he needs up to the full amount to which he is entitled before a later appropriator may take any.

Normally, appropriative rights are inferior to riparian rights. An exception to this is the case of an appropriation of water diverted from streams flowing through vacant public lands before the riparian lands were withdrawn from the domain of the United States. The appropriative diversions or the lands they serve may be either upstream or downstream from the riparian lands. Any water not needed for the reasonable beneficial uses of those having prior rights may properly be appropriated.

No formal or statutory procedure is or ever has been prescribed or required in this state for those who take water by means of wells from underground percolating waters or underground basins. An appropriative right to take surplus water from such sources is acquired by extracting such water from the underground and applying it to beneficial uses.

Provided the development and application to use are completed with reasonable diligence, the priority of the right as against another appropriator related back to the first substantial act toward putting the water to use or to the date of application. Until 1872, water flowing in natural streams was appropriated by taking the water.

Sections 1410 through 1422 of the Civil Code, enacted in 1872, established a permissive procedure for perfecting an appropriation of surface water. Provision was made for posting a notice of appropriation at the proposed point of diversion and recording a copy with the county recorder. If the statutory procedure were followed and the appropriation completed with due diligence, priority related back to the date of posting; otherwise, priority was established only when the water was put to beneficial use.

Since the effective date of the Water Commission Act of 1913, December 19, 1914, appropriation of surface water and water in subterranean required statutory procedure. An appropriation of such water now can be made in accordance with the provisions of Part 2, Division 2 of the Water code (Water Code Sections 1200 to 1801). An application to appropriate mappropriated water must be filed with the State Water Rights Board. If the application is approved, a permit is issued authorizing the appropriation. Then the appropriation has been completed, an inspection is made and a license is issued, to the extent of beneficial use, provided the terms and conditions of the permit have been fulfilled. The priority of a permit or license relates each to the date of the application.

A right to appropriate water may be lost either by abandonment or by continuous nonuse. To constitute abandonment, there must be concurrence of act and intent, wherein possession is relinquished with no intent to resume it for a beneficial use. Abandonment is, therefore, always voluntary and factual. In the case of an appropriation initiated prior to 1914, continuous nonuse for a period of five years results in the loss of appropriative water rights. In the case of appropriative rights acquired pursuant to the Water commission Act or the Water Code, continuous nonuse for a period of only three years may result in loss of such rights.

Where ground water and surface water are interconnected, one acting as a tributary to the other, both are treated as part of a common supply and users of water from either source are entitled to protection from substantial injury as a result of use by others of water from the other source. Thus, an owner of land riparian to a stream may have his right to the use of water protected against impairment by an appropriator of percolating ground water tributary to the stream and required for the maintenance and support of its flow. Likewise, where water from a stream percolates to a ground water basin or stratum, the owner of land overlying the ground water supply may be protected

from an appropriation of water from the stream if this causes a substantial impairment of the ground water supply. As between riparian use of surface water and overlying use of ground water tributary to the stream, a sharing of the available water supply on the basis of reasonable beneficial use should be made.

### Prescriptive Rights

It is possible to appropriate surface or ground water which is presently needed by others to satisfy riparian, overlying, or prior appropriative rights. Such appropriations may ripen into prescriptive rights where the use is actual, open and notorious, hostile and adverse to the original owners, continuous and uninterrupted for the statutory period of five years, made under claim of right, and with payment of taxes whenever such have been levied on the water rights. Absence of any of these essentials precludes the acquisition of prescriptive water rights.

Prescription of a right thus requires that, for a period of five years, the rightful owner either knows or should know of the adverse taking and fails to take any physical or legal steps to interrupt such taking. Irrespective of the needs or demands of the riparian, overlying, or prior appropriative user, an absolute right to only a fixed amount of water may be acquired by prescription. The quantity of such a right is determined by beneficial use. However, present use is the measure of the prescriptive right, and future needs cannot be included.

Riparian rights, overlying rights, appropriative rights, and prescriptive rights may be lost or diminished by prescription. While there is sufficient water flowing in a stream to supply the wants of all parties, the use of the water by anyone does not deprive the others of their water supply and, hence, is not an invasion of their rights. The same principle applies to a

downstream diversion of water as against the rights of an upstream riparian landowner or prior appropriator. At times when the safe yield of a ground water basin exceeds the needs of overlying landowners and appropriators, their prior rights are not invaded by a later appropriative taking of water from the underground supply. The later appropriation becomes adverse only when the ground water basin is overdrawn; that is, when the annual draft exceeds the safe annual yield. Although neither an overlying owner nor a prior appropriator may prevent a taking of surplus water, either the owner or the appropriator may institute legal proceedings to safeguard the supply once a surplus ceases to exist, and may enjoin any additional use beyond the point of safe yield. Since prescriptive rights can only be acquired to non-surplus water, these rights cannot ordinarily be acquired against the future needs of riparian or overlying owners.

The prior appropriator, lower riparian, or overlying owner may protect his rights for his present needs against an adverse appropriator by actually taking the needed water before the five-year period has run, or by the aid of the courts in the form of a declaratory judgment or injunction within the five-year period.

### Determination of Water Rights

Under provisions of the Water Code, actions brought before either state or federal courts which involve determination of rights to the use of water may, at the court's discretion, be referred to the State Water Rights Board. Under provisions of Water Code Section 2000, the court may appoint the board to referee "any or all issues involved in the suit," or under Section 2001, it may limit the reference to "investigations of and report upon any or all physical facts involved." This reference procedure may be followed in suits involving either surface or ground waters, or both.

An alternative procedure for adjudication of rights to the use of water of streams, lakes, and other bodies of water, is available upon petition to the State Water Rights Board, but the method excludes the determination of rights to take water from an underground supply other than from a subterranean stream flowing through known and definite channels. Water Code Sections 2500 to 2900, inclusive, authorize the initiation of such proceedings.

### Litigation Concerning Local Water Rights

There has been no major adjudication of water rights in the Mad River-Redwood Creek Hydrographic Unit. Consequently, neither the State Water Rights

Board nor any of its predecessor agencies has been involved in a court reference
and state watermaster service has not been established.

### Applications to Appropriate Water

Applications to appropriate water within the Mad River-Redwood Creek Hydrographic Unit, filed with the State since 1914 and active on October 1, 1960 are summarized in Table C-1. For each application relative to a diversion reported in Chapter II the diversion location is included in the table. The status of each application as to the granting of a permit or license is also shown in the table.

### MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT APPLICATIONS TO APPROPRIATE WATER IN

(Filed with State Water Rights Board as of October 1, 1960)

7/0,736 Fe 1/0,736 Fe 1/0,739 Fe	Present owner	diversion location	Source	1/4	1/1	-	-	-	Amount	diversion	Purpose	Stotus
	ercy J. Jackson				-	Sec Tp	œ	8 9 %				
		1	Green Point Greek	60 Fd	N.S.	15 6	9E 3E	207	.028 cfa	May 1-Nov 1	Irrigation, 2,25 acres	1-927
	Mick V. and Maybelle A. Tompkins	1	Littlefield Creek	). (5)	NB 3	33	X)	*	0,57 cfs	Jan 1-Dec 31 May 15-Jul 1	Domestic Irrigation, 15 acres	1-1373
	Estate of Hinds A, Kell	1	Spring tributary to Mad River	SS SS	745 236	7	3K (E	72	0.038 cfs	Jan 1-Dec 31 Jun 1-Oct 1	Domestic Irrigation, 3 acres	1-1041
	William F. Silva	6N/1E-731	Mad River	Ð	E)	-4	SN LE	Ξ	0.8 cfs	Jun 1-Sept 15	Irrigation, 100 acres	L-151.7
	Fred and Mary Mathie	1	McNelll Greek	M. C.	SE I	а п	- IW	z	3,000 gpd	Jan 1-Dec 31	Domestic	1-127
	Frank E.Kelly, Mrs. M. T. Holland, Mrs. J. C. Wallace, Rits Regil, Ella J. Kelly, and Sophia Kelly	ı	Nad River	No.	2 S	752	N9 6N	XX.	0.12 cfs	May 1-Sept 1	Irrigation, 10 acres	L- 728,
7/17/33 C1	City of Eureka	SN/2E-16G	Mad River	35 88	E E E	16 5	X X	X X	750 ME 7.74 cf8	Oct 1-Jun 30 Jan 1-Dec 31	Minicipal	Present
10/9/33 80	Sowena J. Townsend	8H/1E-3240	Tributary to Pacific Ocean Tributary to Pacific Ocean	NW NE	SE	32 8	## ## ##	X I	31,000 gpd	Jan 1-Dec 31	Municipal	L-2630
10/20/33 Ma	Mary, Attillo, John, Eillian, Hazel, and Eather Fifferini	6N/IE-7L1	Mad River	EI CO	ž.	2	5N 11E	*	0.17 cfs	Jul 1-Aug 31	Irrigation, 40 acres	I-1004
1/8/34 Ed	Edward Latter	1	Mad River	MW	SE	2	EN LE	*	0.13 cfe	May 1-Sept 30	Irrigation, 25 acres	1-1600
75/37 87	Simpson Redwood Company	1	Tributary to Wilson Greek	SW	FE		3N 3E	Ξ.	1,000 gpd	Jan 1-Dec 31	Domestic	L-175
6/11/35 Dr	Dr. and Mre. C. G. Wiggins	1	Mad River	N.S.	Me SS	- 4	3E 177	2	0.018 cfs	Jul 1-Sept 15	Irigation, 3 acres	1-2386
7/13/35 St	State of California Department of Fish and Game	11N/1E-23A1	Lost Man Greek	¥.	ME 2.	23 11.N	N 1E	*	1.86 cfs	Jan 1-Dec 31	Recreational, domestic, and fish culture	L-2355
1/25/37 No	Meta H. Moore	1	Mad River	NW NE	SE	99	6N LE	22	0,36 cfe	Jun 1-0ct 15	Irrigation, 18 acrea	L-4057
3/3/37 Ja	Jay and Emma Powell and Roland and Eleanor Johnson	1	Mil Creek	Ä	SE 23		8N I.W	н н	6,900 gpd	Jan 1-Dec 31	Domestic	1-3733
10/1/37 3t	State of California Division of Highways	1	Mill Greek	SE SE	SE 23		SN IN	*	3,000 gpd	Jan 1-Dec 31	Industrial and domestic	L306
12/29/37 60	Cora H. Taylor	****	Pishes Mill Greek	SE	SE	9 en	N JE	×	0.03 cfs	Jan 1-Dec 31	Domratic	L-2703
5/16/38 814	Slanche W. Slaughter and John A. and Florence Warren	-	Spring tributery to Mad River	S S	3	7	377 NE	*	7,000 gpd	Jan 1-Dec 31	Domestic	L-2556
7/21/38 Per	Paul R. Quatavson	1	Mobson Creek	MB	TI DE	- SB	MT N	×	pd9 008 *7	Jan 1-Dec 31	Domestic	12.623
1/16/39 E.	E. C. Mead, Sertha E. Mead, and Annabel Mead Murray	1	Tompkins Greek	35	# 23		N N	2	150 gpd	May 1-Oct 30	Domestic	L-2782
3/12/40 Mr	Mrs. Zelda Douglas	da an	Widow White Creek	NA	33		N. IE	2	0.18 cfs	Mar 1-Nov 15	Irrigation, 25 acres	L-3209
5/22/40 G.	G. Millard and Thelma J. Foster	ì	McNelll Creek	MS	T	***	MI JM	=	0.06 cfs	Jan 1-Dec 31 May 1-Nov 1	Domestic Irrigation, 15 acres	L-3192
							-					

P = Indicates permit number of application approved.
 L = Indicates license number of right of
 D = Indicates license number of right of water feet or more per year located by Department of Water Resources.

TABLE C-1 (Continued)

## APPLICATIONS TO APPROPRIATE WATER IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

(Filed with State Water Rights Boord as of October 1, 1960)

Application	Dota		OWR**		100	Location of	point of	of diversion	sion	-	-	Period		
number	filed	Present owner	diversion	Source	1/4	1/4 8	Sec	T <sub>P</sub>	R 89 8	Ø M	Amount	diversion	Purpose	Stotue
10097	1/4/41	City of Slue Lake	6N/2E-21C1	Tributary to North Fork Mad River	SN SN	M	ส	6N 2	1 19	2	0.045 ofe Ja	Jan 1-Dec 31	Municipal	L-2861
10317	11/13/11	Carl Martin	7N/1E-32F1	Widow White Greek	\$1) \$1)	N.	32	- MT		×	0.03 cfe Ju	Jul 1-0ct 1	Irigution, 3 acres	1-4547
10351	1/2/42	John D. Daily	7H/1E-31C1	Widow White Greek	NE	3	<u>ب</u>	- K		==	0,05 cfe Ma	May 1-Oct 1	Irrigation, 6 ceres	1-2954
10510	7/16/42	United States Six Rivers National Forest	1	Spring tributary to Mad Hiver	Ne.	NS NS	3%		- 267		1,500 gpd Ja	Jan 1-Dec 31	Domestic	1-2825
10620	3/31/43	John Branecom	I	Dradman Creek	386	38	 8	- NB		*	350 gpd Ja	Jan 1-Dec 31	Domestic	1-3477
10767	2/14/44	Joseph W. Maneses and Estate of Diolinda Maneses	1	Spring tributery to North Fork Widow White Creek	MM	95 54	≈	- K		~ ~	2,500 gpd Ja	Jan 1-Dec 31	Domestic and stockwatering	L-3083
11039	5/1/45	Kigin O. Edoline	8N/1E-31D1	Laffenholts Greek	NW	£	۳ س		E	*	1.13 cfs Ja	Jan 1-Dec 31	Power	1-3542
11128	8/9/45	Wallace A. Turner	1	Mill Grook	N.	NB		- 1 - 1		×	0.25 cfe May	Hay 1-Nov 1	Irrigation, 20 acres	1-3336
11185	10/19/45	Henriette Reimann Hartman	7N/1E-18B1	Patrick Greek	-%. -%.	25 25	18	- NY		=	0.9 efe Mus	Huy 1-Nov 1	Stockwatering and irrigation, 175 acres	1-371.3
11299	3/4/46	Mick V. and Haybelle A. Tompkine	ı	Spring tributary to Littlefield Greek	N	N.	32	23	× ×	× ×	2,100 gpd Jau	Jan 1-Dec 31 Jun 1-Oct 1	Domestic and etockwatering Irrigation, 1.5 acres	1-3607
11369	4/12/46	United States Six Alvere Netional Forest		Spring tributary to Mad River	SE SE	385	- 2	9 हा	H 39	<u> </u>	150 Rpd Ma	May 1-0ot 31	Recreational	1-3235
11497	8/5/46	Mr. and Mrs. Frank W. Mayer	I	Mobern Greek	NE	NW 1	<del>ه</del>	- F	MT H	=	0.08 ofe Jun	1-Dec 31 1-0ct 31	Domestic Irrigation, 9 acres	1-3363
11508	8/12/46	Moddlecraft, Inc.	1	Mnd Elver	NE NE	- MM	16 6	N9	II.		0,31 of 9 Jan 30 af Jan	Jan 1-Dec 31 Jan 1-Dec 31	Industrial, domestic, and fire protection	1-3126
11510	8/14/46	A. W. Thoma	7N/18-17E2	South Fork Patrick's Greek	36	NW J	17 7	7N 7.	- H		0.18 cfs Nay	May 1-Oct 1	Irrikation, 20 sores	1-4352
11983	1/22/12	E. C. Mead, Bertha E. Mead, and Annebel Head Murray	ı	Tompkine Greek	MS	N.E.	2	2	H 22		850 gpd Ne	Mar 15-Dec 1	Domestic	1-3907
12233	1/6/18	City of Slue Lake	6N/2E-21C1	Tributary to North Fork Mad River	NE	- Z		- N9	¥ 	'ਨ 	21,000 gpd Ju	Jan 1-Dec 31	Municipal	1-5012
12653	8/16/48	Edgar Lax	1	Captain Grook	MS	38	 		38	77	14,000 gpd Jan	Jun 1-Dec 31 Apr 15-Oct 15	Domestic Irrigution, 1 acre	1-3749
12654	8/16/48	Loftus Gray	***	Captain Crook	38 62	38	э я	- N9	3E N		5,760 gpd Jan		Domestic	1-4706
12959	3/11/10	Namiond Lumber Company	9N/1E-19G1	Oray Creek	MS.	NE		N6	31	je:	1 ofe Jan 780 af Nov	n 1-Dec 31	Industrial	1-3536
13523	12/29/49	George M. and Irms P. Nolt	1	Spring tributary to Mad Niver	¥.	3₩	า ส	9 A	N SE	~	llo gpd Jan	1-Dec 31	Domestic	1-4919
13693	17/13/50	Devid S. Ward	7H/1E-8R1	Sulwinkle Creek	38	38	- 2	- N.	J.E.		0,19 ofe Man	Mar 1-Nov 1	Irikation, 20 acres	1-4818
13978	10/4/50	Marcld E. and Sibyl M. Jamieson	1	McConnaha'e Mill Greek (New Mill Greek)	NW	- 7 - M		N8	M.		1,000 gpd Jar	Jan 1-Dec 31	Dome at 1 c	1-4326
14063	11/20/50	Roddiscraft, Inc.	4N/3E-680	Soulder Creek	N.	82 60	9	N7	3E	=	0.12 ofm Jan	Jan 1-Dec 31	Industrial and fire protection	1-4858
. 91270	3/28/51	State of California Division of Forestry	EN/14-W1/N8	Tributery to Pacific Ocean	No.	38	 ส		- MT		0,035 cfe Jan	Jan 1-Dec 31	Domestic and fire protection	1-4519
P - Indicate	permit number	F - Indicates permit number of application approved. L = Indicates of 10 area_fast or more ter was located by Beans	Indicates license	number of right confirmed. Incomplete - Indicates application not yet scaplete,	cates apply	catton	lot yet	somplet		Pending -	Pending - Indicates application	plication cosp	complete but not yet approved.	

C-11

### MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT APPLICATIONS TO APPROPRIATE WATER IN

(Filed with State Water Rights Board as of October 1, 1960)

Application	0000		DWR "			Location	5	point of d	divaration			Period		
number	filed	Present owner	locotton	Source	1/4	1/4	Sec	a L	œ	B 00 E	Amount	divaraion	Purpose	Stotus
34,300	6/25/51	Simpson Redwood Company	1	Beaver Creek	NE	SA	>	N.C.	200	=	pds 000*7	Jan 1-Dec 31	Domestic	1,753
177702	9/6/51	Dugene W. and Edith Blake	1	Underwood Greek	Ŋ	¥	R	Ē	Ħ	×	6,000 gpd	Jan 1-Dec 31 May 1-Sept 30	Domestic Irrigation, 8 acres	1-4629
27772	15/11/61	Number Inc. of California	9	Molasses Creek	in the second	341 07	80	K.	32	=	Ju 87	Feb 1-Mov 1	Industrial and fire protection	1-4269
14,519	10/15/51	Edward Charles Bott	7N/18-18H1	Patrick Grook	235	沒	18	3	Ħ	æ	0.2% ofa	May 21-Oct 31	Irrigation, 50 acres	L4563
14669	2/m/s	Roy Duncan	ı	Spring tributary to Redwood Greek	SE	ij	50	10M	Ħ	90	3,000 kpd	Jan 1-Dec 31	Densitie	1-5906
14677	2/22/52	Malvin P. Moberts, Jr.	1	Mad River	No.	Mabla d	lversion 31	n point	Petro	£ == =	0,30 cfs	May 1-Oct 1	Irrigation, 30 acrea	L-5103
14831	5/28/52	Ralph Durn	1	Underwood Greek	, E	N. S	1 8	, i	9 13	= 30	500 gpd	Jen 1-Dec 31	Domestio	1-5050
15085	11/17/52	John R. and Albert M. Forrest	7N/1E-17R2	Tributary to Strawberry Creek	SA CO	80	17	75.	Ħ	æ	0,28 cfs	May 15-Oct 15	Irrigation, 40 acres	6605-7
15325	5/17/53	Alexander G. Bossinas	ı	Tributary to Peach Greek	N	3	35	N6	38	=	15,000 gpd	Jan 1-Dec 31	Fish culture	1-5m
15328	5/17/53	Jesa A. Lutter	7N/1E-27H1 7N/1E-27H1 7N/1E-27R1	Lindsay Greek Lindsay Greek Lindsay Greek Lindsay Greek	NA SE	NE NE SE	22228	****	*****		0.1 cfs	Jun 1-Sept 30	Irrigation, 30 acres	1-5235
15336	5/11/53	Charles H. Feldmiller	1	Spring tributary to Med River	MS.	NA.	Ŋ	ă	(s) (O	50	2,200 gpd	Jan 1-Dec 31	Dominatio	1-5222
15997	8/13/54	Mary Fischer Kretner	1	Maple Greek	NA.	W	9	N7	38	30	100 gpd	Apr 1-Nov 1	Domestic	L-5293
164,52	25/1/7	City of Bureka	ı	Mad River Underflow	W	<b>B</b>	25	N9	Ħ	90	2,32 cfs	Jan 1-Dec 31	Municipal	P-10342
164%	35/1/1	Humboldt Bay Municipal Water Diatrict	1	Mad River Rediversion:	N. W.	图 图	15	S1 %	E	==	100,000	Oct 1-Apr 30	Municipal	P-11714
16562	8/31/55	Mr. and Mrs. N. G. Cottrell	ı	Mad River	MM	365	23	NT.	863	æ	500 gpd	Jan 1-Dec 31	Domestio	P-10396
16756	11/30/55	State of California Division of Highways	7N/3E-31C1	Tributary to Long Prarie Greek	N	×	31	Ę.	38	90	0.031 cfe	Jan 1-Dec 31	Domestic	L-5573
170%9	4/24/56	California Water Commission	\$	Mad River	ı	K	17	ă	Mg o	×	300,000 af	Jan l~Dec 31	Irrigation, domestic, municipal, industrial, flood control, recreational, ealinity control, and fish and wildlife	Incomplete
17050	4/24/56	California Water Commission	1	Mad River	1	N.	17	ă	<b>3</b> 9	25	500,000 af	Jen 1-Dec 31	Power	Incomplete
17291	9/27/8	Numboldt Bay Municipal Water District	1	Mad filver Mad River	NN NA	W W	19	1.5 6.N	E	x =	20,000 af	Oct 1-Apr 30 Jan 1-Dec 31	Municipal	P-11715
17349	11/5/56	6. K. and June E. Phoracle	1	Tributary to Wildow White Greek	MS SW	35	53	H.	Ħ	±	0,25 cfs 2,5 af	Jan 1-Dec 31 Nov 1-May 1	Recreational, flan culture, and irrigation, 7 acres	P10905
P - Indicates	permit numbe	P - Indicates permit number of application approved. L - Indicates license number of right confirmed.	Indicates license	number of right confirmed. Incomplete - Indicates application not yet complete,	da setes	plication	n not ya	t compl	it.	Pendin	g - Indicates	application comp	Pending - Indicates application complete but not yet approved.	

P - Indicates presi number of application approved.
 L - Indicates Research or Department of Water Resources.
 Diversion of 10 acre-feet or more per year located by Department of Water Resources.

TABLE C-1 (Continued)

# APPLICATIONS TO APPROPRIATE WATER IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

(Filed with State Water Rights Board as of October 1,1960)

	0
90000	
d River	Tributary to Mad
	Old Mill Creek
Spring tributary to Mad River	outar
low	Mad River Underflow
Tributary to Warren Creek	o War
Tributary to Strawberry Greek	o Stra
	Prairie Creek
r to Hees Creek	Spring tributary
McConnaha's Mill Greek	H.
	Martin Creek
Spring tributary to Smith Crook	2
Hobart Greek tributary to Mad Alver	-20
Spring tributary to Mill Greek	~
Johnson Greek	
Tributary to Pacific Ocean	

Bul

Hydro
Tule Ri Triniti Yuba - Smith I Shasta Klamati
Mad Ric Eel Ric Lost Ric Mendoci
Russian Sacram Putah Americ
Sacrame Sacrame Feather Shasta

### Bulletins Simil

Bulletin No.	County or
70	Orange County
71	Upper Santa An
101	Southeastern I
102	San Diego Cour
103	San Luis Obisp
24-60	Coastal Los An
121	Southern Lahon
122	Ventura County
	Drainage

TABLE C-1 (Continued)

## APPLICATIONS TO APPROPRIATE WATER IN MAD RIVER - REDWOOD CREEK HYDROGRAPHIC UNIT

(Filed with State Water Rights Board as of October 1, 1960)

Data		0.000		1 00	nentino i	and only	of divi	diversion	_	0	0		
filed	Present owner	diversion	Source	2/2		U		mi.	Ø. ∑.	Amount	of	Purpose	Stotus
3/111/57	Anton Lioka	-	Mad Rivor	E	SW	27	N N	9 9	H	150 gpd Jun 1	Jan 1-Dec 31	Domratic	1-5829
11/11/57	M. J. Vance	1	Mid River	ME	38	12	N,	99	=	100 gpd Jan 1-Dec	31	Domestic	L-5814
15/11/21	Charles L. McAlister, W. C. Turner, and Ernest E. Walund	1	Tributary to Mad Miver	N. S	MM	60	N7	E .	75	1,500 gpd Jan 1	Jan 1-Dac 31	Domostic	P-11381
6/11/57	City of Trinidad	8N/1W-23H1	Old Mill Crosk	SE	NE	ଅଟ	88 N	TM TM	z =	0.17 cfs Jan 1-Dec	33	Municipal	P=11257
1/9/57	Christian and Elsie L. Knudsen	1	Spring tributary to Mid Alver	MS	35.00	51	N9	18	=	10,485 gpd Jun 1-Doc	31	Domestic and irrigation, 3 acres	P-11132
9/16/57	Gino Spadeni	1	Mad River	35	MS	2	15	99 9	z	1 and Jan 1	Jun 1-Dec 31 [	Domestic Irrightion, 2 acres	1~5804
1/20/57	John G. and Elva M. Brown; Allen G. and Dorothy'R. Brownfield	1	Mad River	NN NA	SE	20 00	35	38	**	l.58 cfs May l	May 15-0ct 15	Domestic, stockwatering, and irrigation, 126 acres	P-11336
2/11/58	Molvin P. Roberts, Jr.	6N/2E-31H1	Mad River	Movabl NW NE	NE NE	31 nud	point br	brtween 2E 2E		0.73 cfs May 1	May 1-Oct 1	Irrigution, 120 acres	P-11511
5/12/58	City of Arcata	!	Mad Miver Underflow	MS	WM	16	en en	3E	z.	6 cfs Jun 1	Jun 1-Dec 31	Municipal	P-11917
7/2/58	William C. McConnaha	ł	Tributary to Warren Greek	MM	MS	23	N CN		Z	0.1% cfo May 1	May 1-Nov 1	Irrigation, 7 acres	P-11748
12/16/58	Cacil F. Hiller	1	Tributury to Strawborry Creek	MM	80 F3	8	7N	1E	π.	15 af Doc 1	Doc 1-May 1	Irrigation, 15 acres	P-11824
4/15/59	James E. Grasswick	đ P	Mill Crook	ME	SE	8	N80	3.W	<b>x</b>	3,500 gpd Jan 1	Jan 1-Doc 31	Domestic, recreational, and fish culture	P-12112
10/8/59	Arcata Redwood Company	11N/1E-2701	Prairie Creek	MS	<u>a</u>	8	NII	IE	=	10,000 gpd Jun 1-Dec	33	Industrial and fire protection	P-12242
11/2/59	Harry Barther		Spring tributary to Hess Greek	MN	NE	35	8N	MI.	22	0.07 cfs Jun 1	Jun 1-Nov 1	Domestic and irrivation, 5 acres	P=12367
11/23/59	City of Trinldad	1	McConnaha's Mill Greek	ass	MS.	ಸೆ	NS SN	J.W.	===	0,054 efs Jan 1-Dec	31	Municipal	P-12383
1/12/60	Samuel J. and Mary Hendy		Martin Creek	器	SW	77	NS SS	т	=	3,500 gpd Jan 1	Jan 1-Dec 31 [	Domestic and irrigation.	P=124,07
11/11/10	D. C. and Charles Littlepage	l	Mill Grook	MM	35	5	N9	TE		0.09 cfs   May 1=Oct	-	Irrigation, 7 acres	Pending
09/92/5	Edward C. Waymire	8 0	Spring tributary to Smith Grook	38	- MS	9	33	22	=	3,500 gpd Jan 1-Dec	31	Domestic and stockwatering	Pending
6/1/60	Floyd J. and Mazel L. White	ł I	Hobart Creek tributary to Had Hiver	M	NE NE	64	73	78		O.l cfs Jan 1-Dec	31	Domestic and irrigation,	Pending
6/24/60	Edna and Dorothy Blasell and Alice Purcell	1	Spring tributary to Mill Greek	NE	38.00	- 2	N9	31	π.	2,000 Bpd Jan 1-Dec	23	Domnstic and Irrigation,	Pending
8/15/60	John G. and Elve H. Brown; Allen C. and Dorothy A. Brownfield	ı	Johnson Greek	MS S	03 83	19	83	38	=	0.04 cfs Jun 1-Doc	31	Domestic and stockwatering	Pending
09/61/6	Koland S, and Eleanor B. Johnson	1	Tributary to Pacific Ocean	M S	NE	23	NB NB	Jw.	· ·	0.025 cfs Jan 1	Jan 1-Dec 31 D	Domestic and irrigation,	Pending
							-		-				

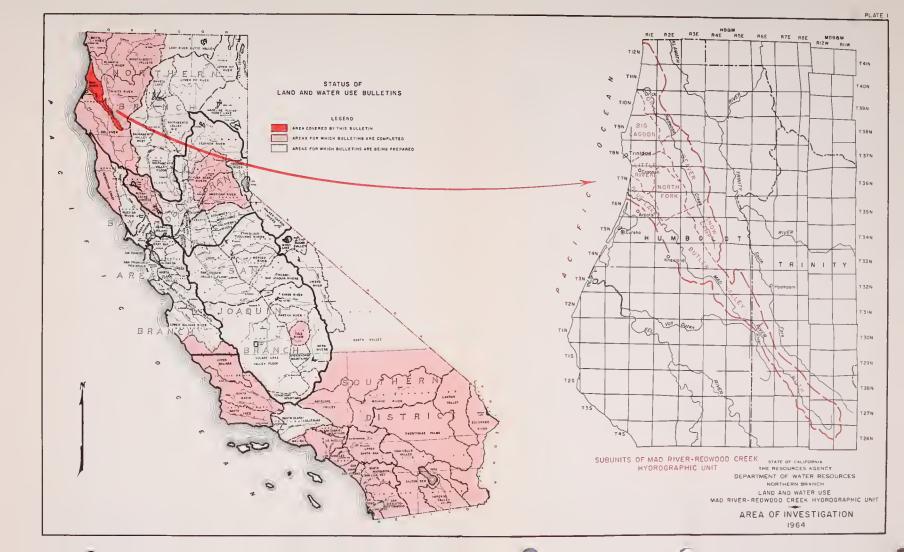
### LAND AND WATER USE BULLETINS

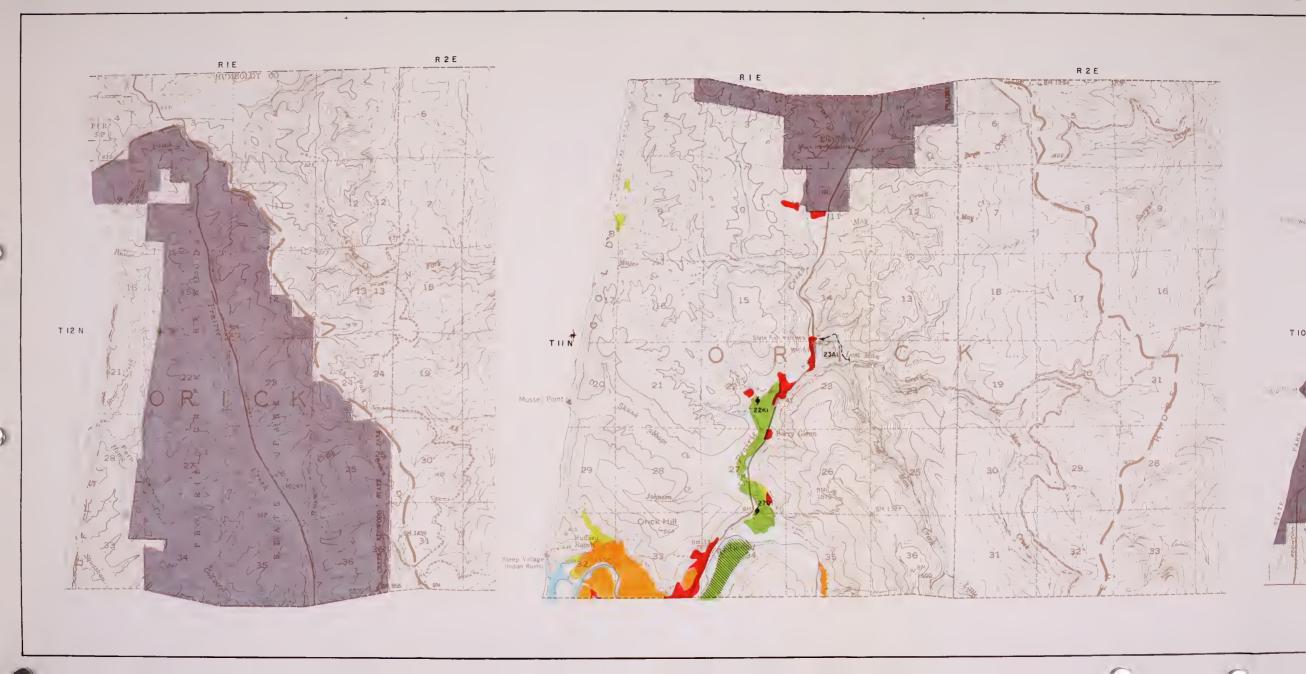
### Bulletin No. 9h Series

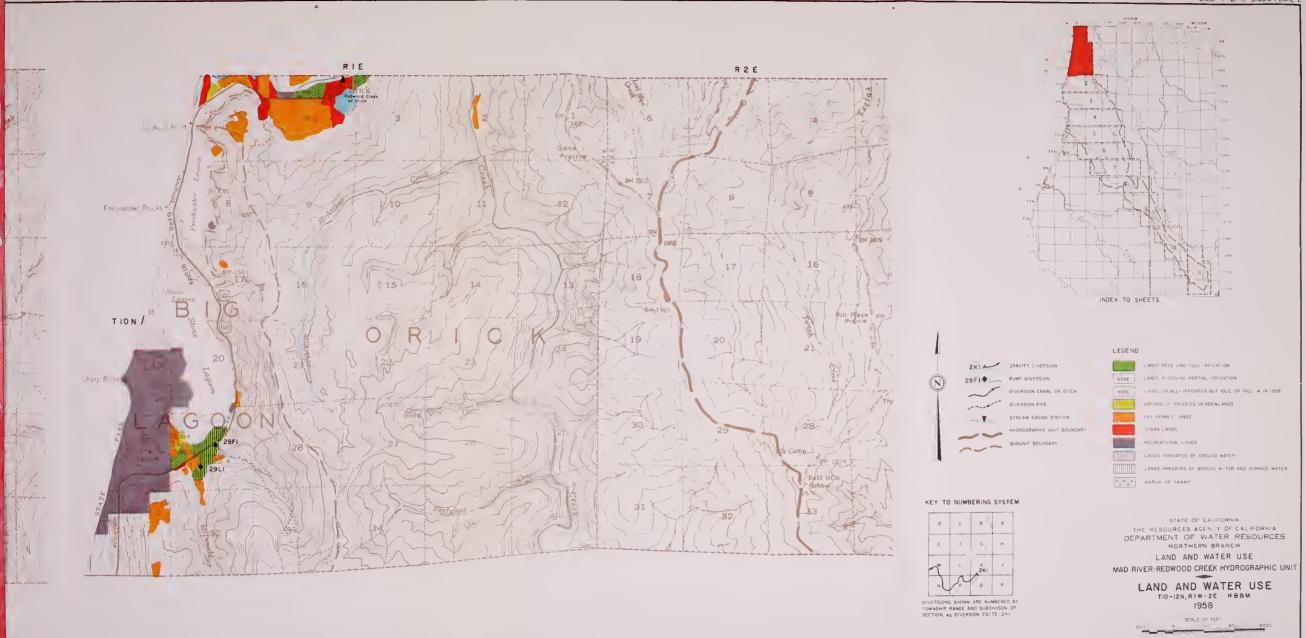
Bulletin No.	Hydrographic Unit Covered	Year of Survey
94-1	Tule River	1957
94-2	Trinity River	1957
94-3	Yuba - Bear Rivers	1957-58
94-4	Smith River	1958
94-5	Shasta - Scott Valleye	1958
94-6	Klamath River	1958
94-7	Mad River - Redwood Creek	1958
94-8	Eel River	1958-59
94-9	Lost River - Butte Valley	1959
94-10	Mendocino Coast	1959
94-11	Russian River	1959
94-12	Sacramento Valley West	1959
94 <b>-1</b> 3	Putah - Cache Creeks	1960
94-14	American River	1960
94-15	Sacramento Valley Floor	1961
94-16	Sacramento Valley Northeast	1962
94-17	Feather River	1962-63
94-18	Shaeta Lake	1963

### Bulletins Similar to the Bulletin 9h Series

Bulletin No.	County or Drainage Area Covered	Year of Survey
70	Orange County	1964
71	Upper Santa Ane River Drainage	1964
101	Southeastern Desert Areas	1958
102	San Diego County	1963
103	San Luis Obispo and Santa Barbara Counties	1959
21;-60	Coestal Los Angeles County	1960
121	Southern Lahontan Area	1961
122	Ventura County and Upper Santa Clara River Drainage	1961

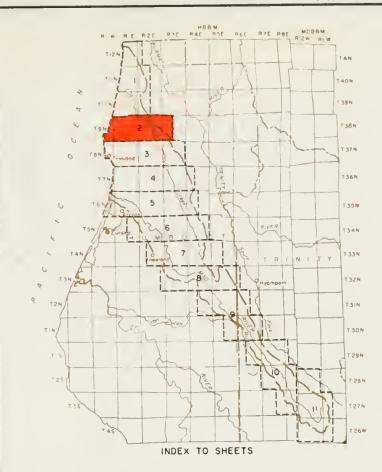






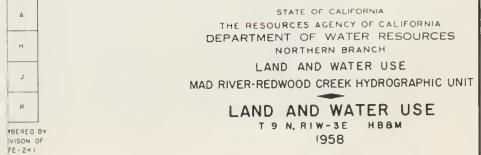
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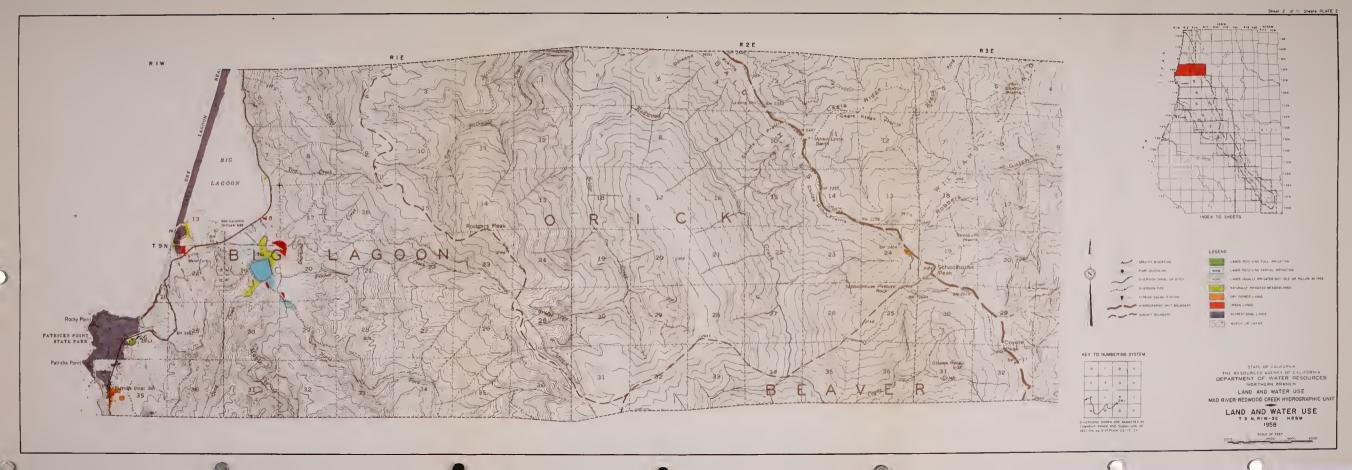


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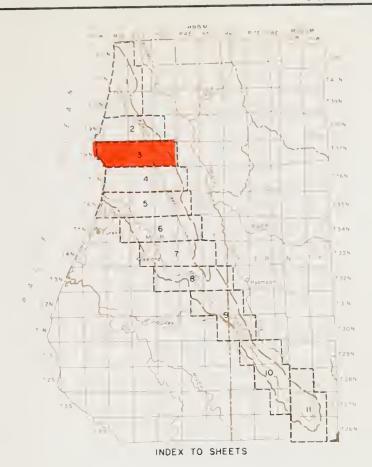


SCALE OF FEET 2000 0 2000 4000 6000











### LANDS RECEIVING FULL IRRIGATION NONE LANDS RECEIVING PARTIAL IRRIGATION LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1958 NONE NATURALLY IRRIGATED MEADOWLANDS DRY FARMED LANDS URBAN LANOS RECREATIONAL LANDS LANDS IRRIGATED BY GROUND WATER

LEGEND

### **JUMBERING SYSTEM**

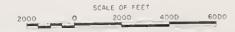


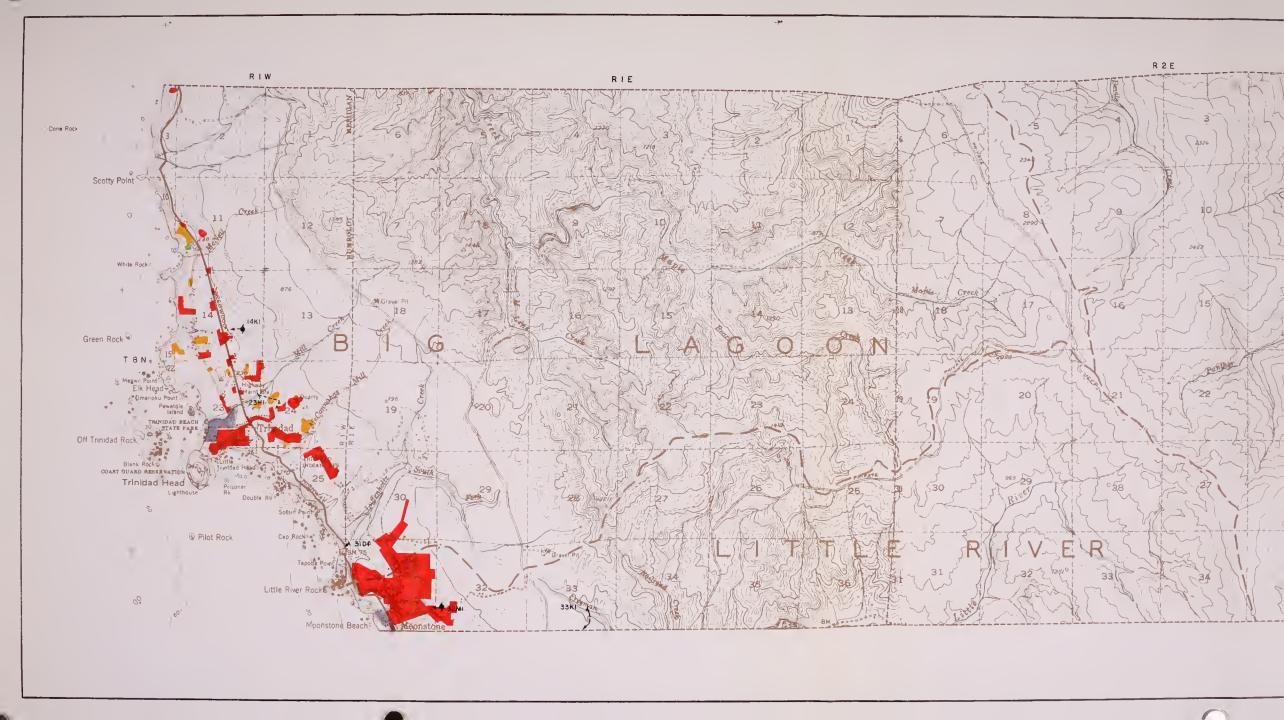
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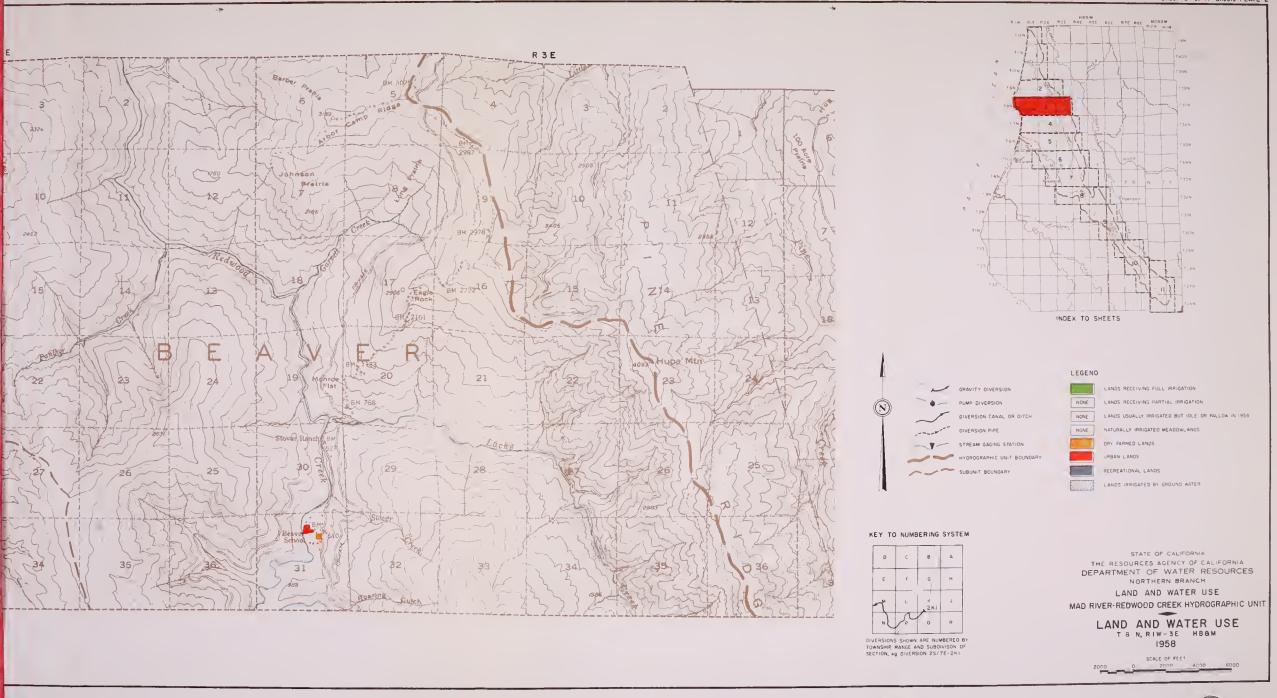
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LAND AND WATER USE MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

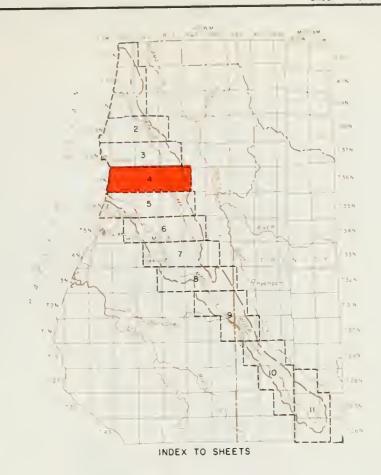
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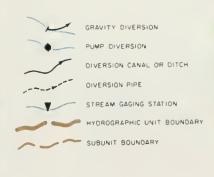












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### ) NUMBERING SYSTEM



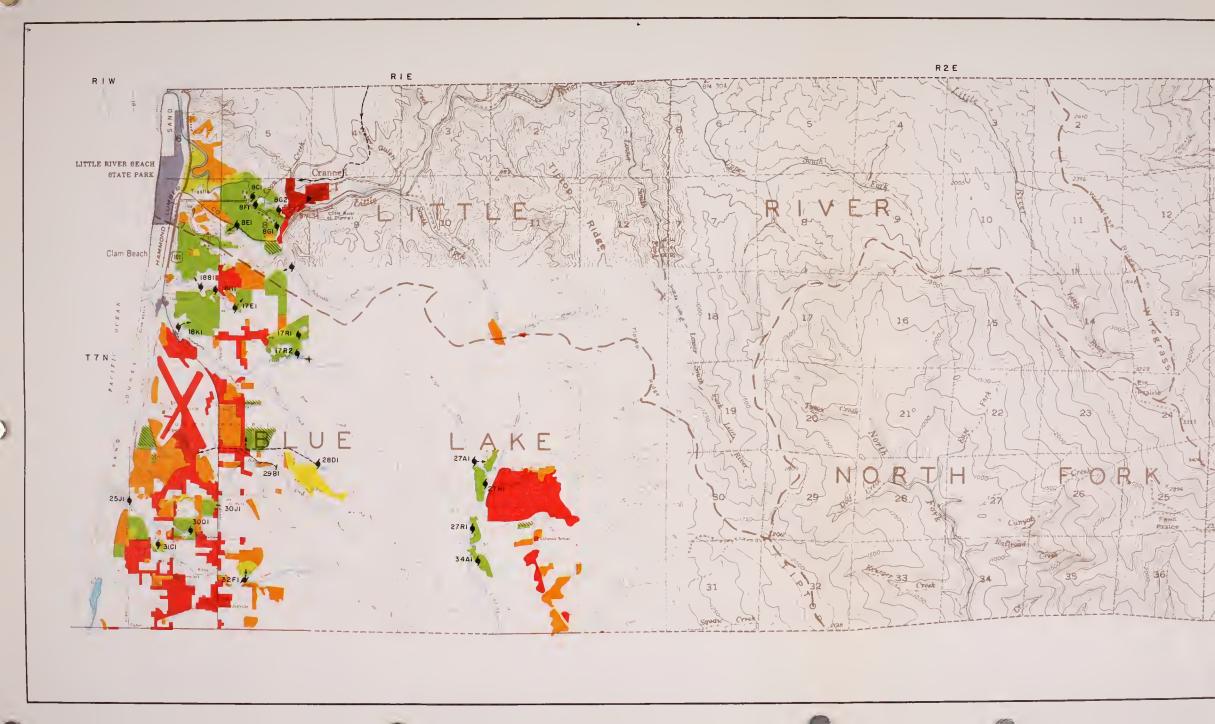
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THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
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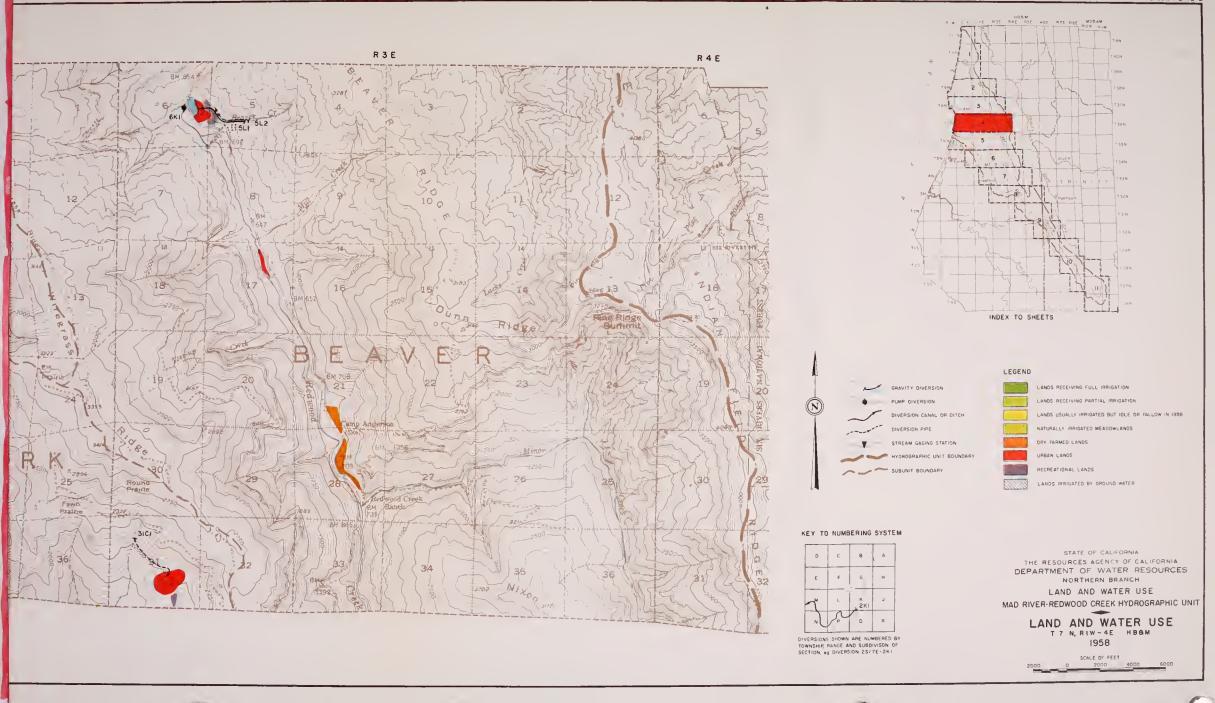
LAND AND WATER USE
MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

LAND AND WATER USE

1958

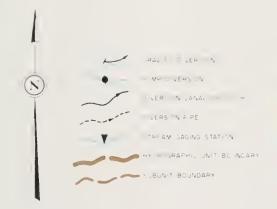
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MARIH R WANH

# KEY TO NUMBERING SYSTEM



TIMNSHIR RANGE AND SIBD VISIN F SECTION OF DIVERTINGS TELL

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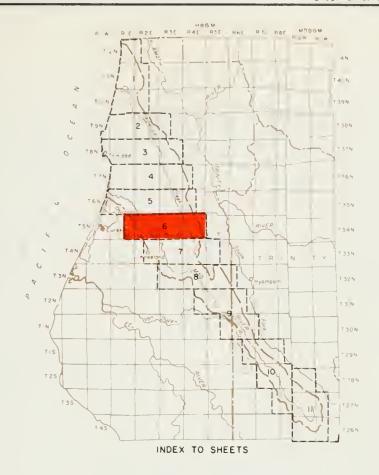
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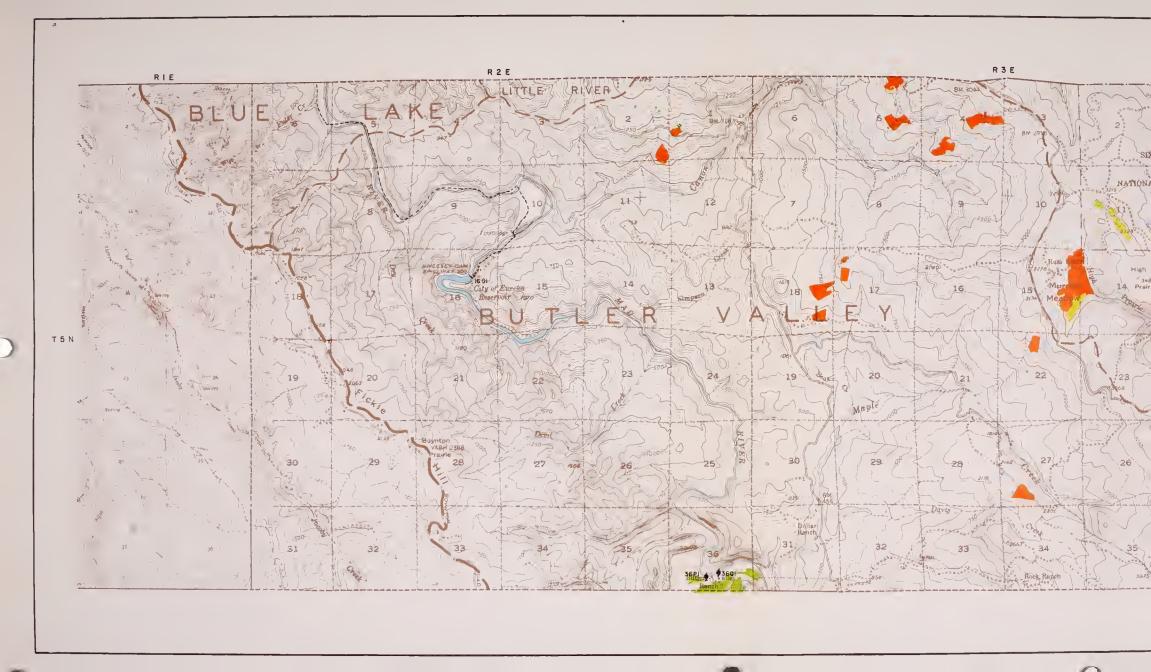
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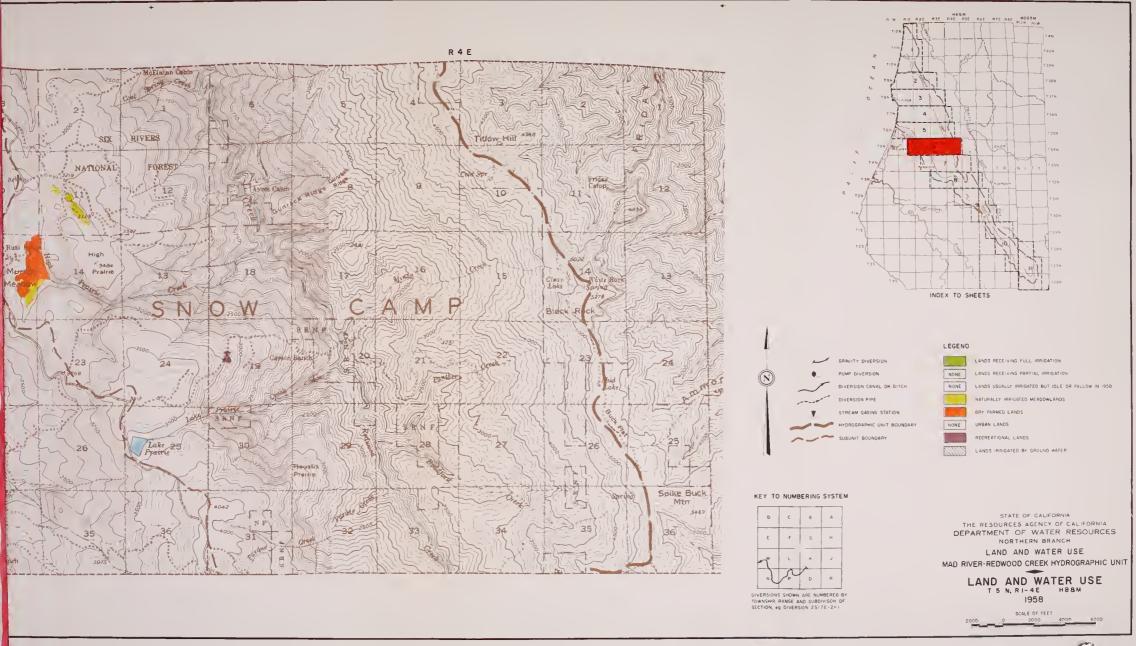
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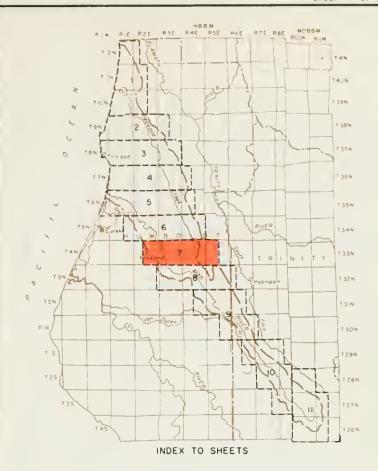
LAND AND WATER USE
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1958

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GRAVITY DIVERSION

PUMP DIVERSION

DIVERSION CANAL OR OITCH

DIVERSION PIPE

STREAM GAGING STATION

HYOROGRAPHIC UNIT BOUNDARY

SUBUNIT BOUNDARY

LANOS RECEIVING FULL IRRIGATION

NONE

LANOS RECEIVING PARTIAL IRRIGATION

NONE

LANOS USUALLY IRRIGATED BUT TOLE OR FALLOW IN 1958

NATURALLY IRRIGATED MEACOWLANDS

ORY FARMED LANOS

URBAN LANOS

RECREATIONAL LANDS

# SYSTEM

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STATE OF CALIFORNIA THE RESOURCES AGENCY OF CALIFORNIA DEPARTMENT OF WATER RESOURCES NORTHERN BRANCH

LAND AND WATER USE MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

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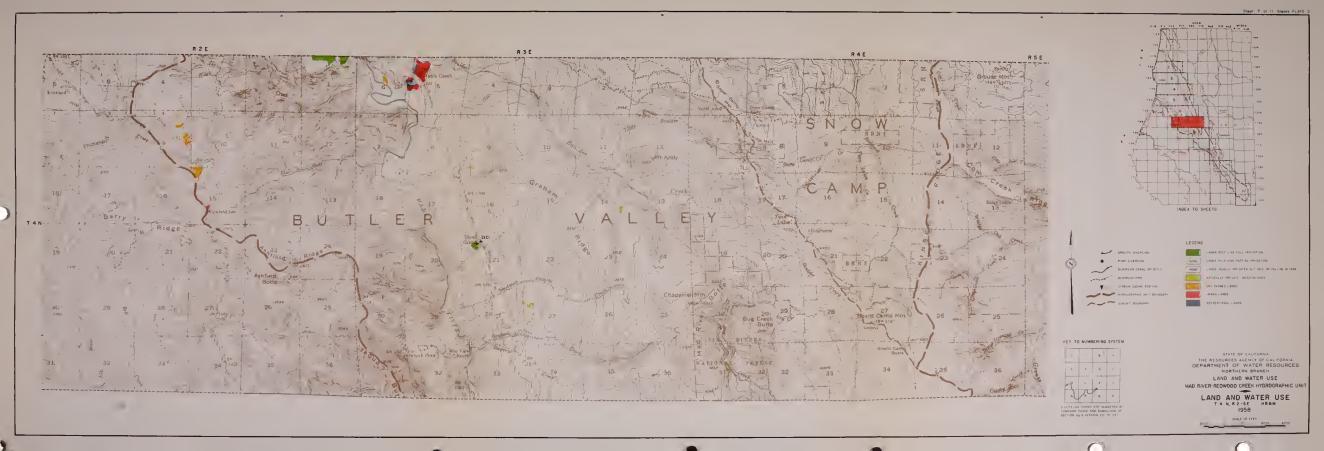
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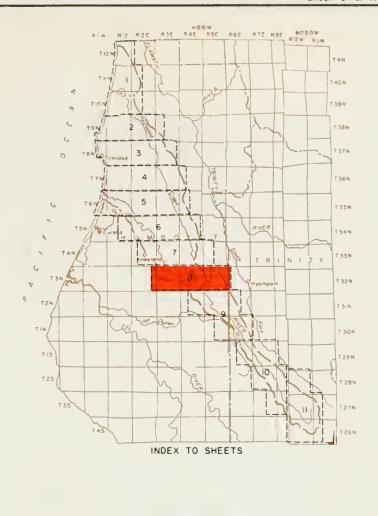
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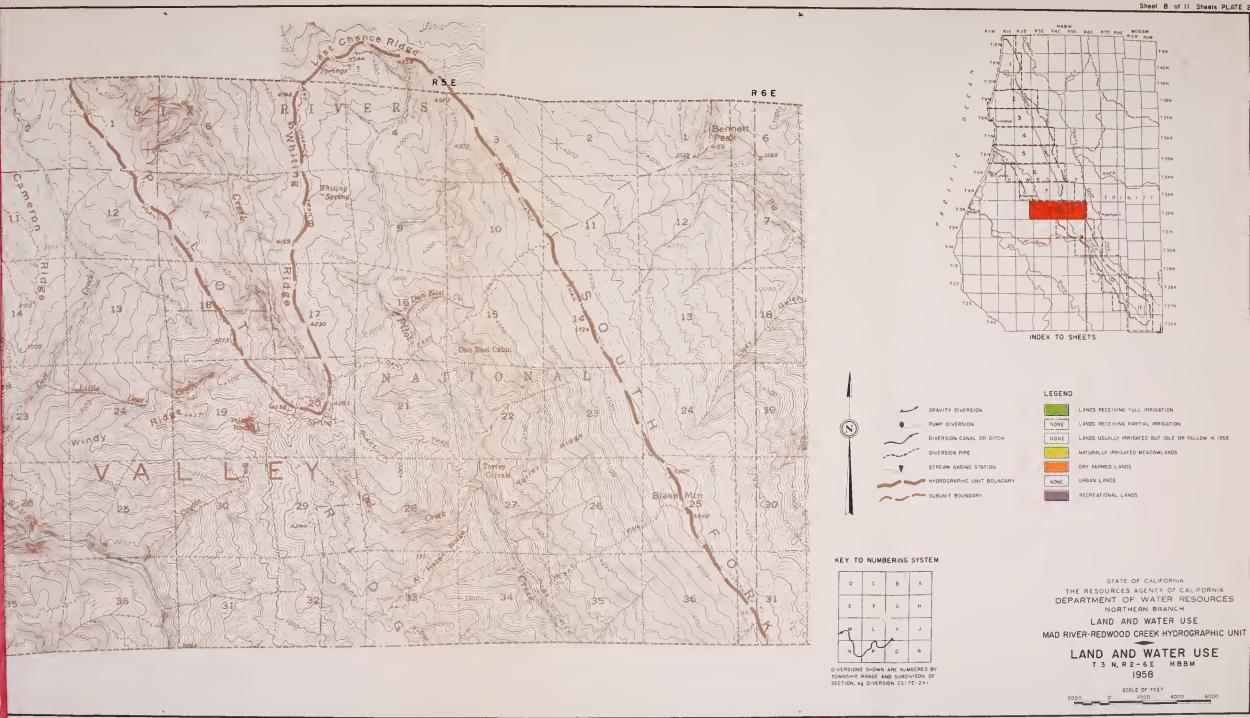
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NORTHERN BRANCH
LAND AND WATER USE

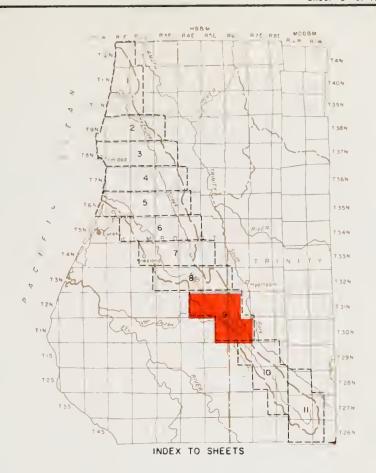
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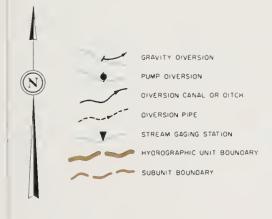
LAND AND WATER USE
T 3 N, R 2 - 6 E H B a M
1958

SCALE OF FEET
2000 0 2000 4000 6000









NONE

LANDS RECEIVING FULL IRRIGATION

NONE

LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1958

NONE

NATURALLY IRRIGATED MEACOWLANDS

DRY FARMED LANDS

NONE

URBAN LANDS

RECREATIONAL LANDS

# KEY TO NUMBERING SYSTEM

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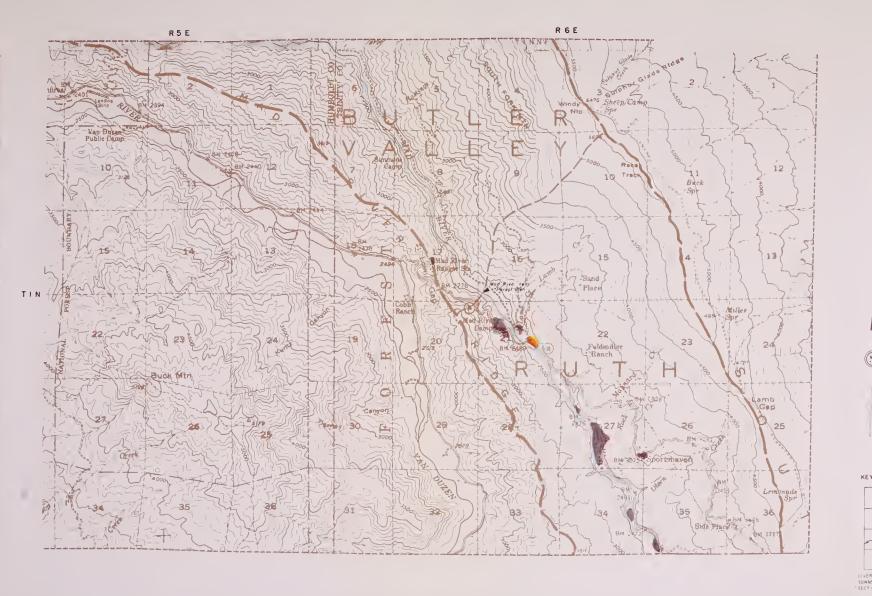
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DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

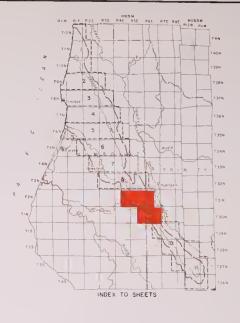
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T1-2N, R4-6E HB&M 1958

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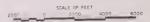
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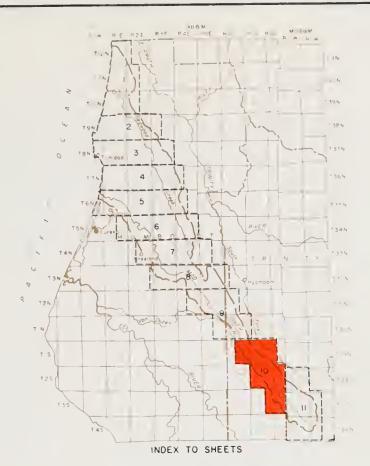
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DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

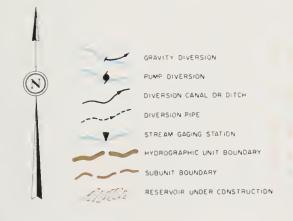
LAND AND WATER USE
MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

LAND AND WATER USE









# LANDS RECEIVING FULL IRRIGATION NOTICE LANDS RECEIVING PARTIAL IRRIGATION LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW N 95B NONE NATURALLY IRRIGATED MEADOWLANDS DRY FARMED LANDS URBAN LANDS RECREATIONAL LANDS LANDS IRRIGATED BY GROUND WATER

# KEY TO NUMBERING SYSTEM



DIVERSIONS SHOWN ARE NUMBERED BY TOWNSHIP, RANGE AND SUBDIVISON OF SECTION, eg DIVERSION 25/78-281

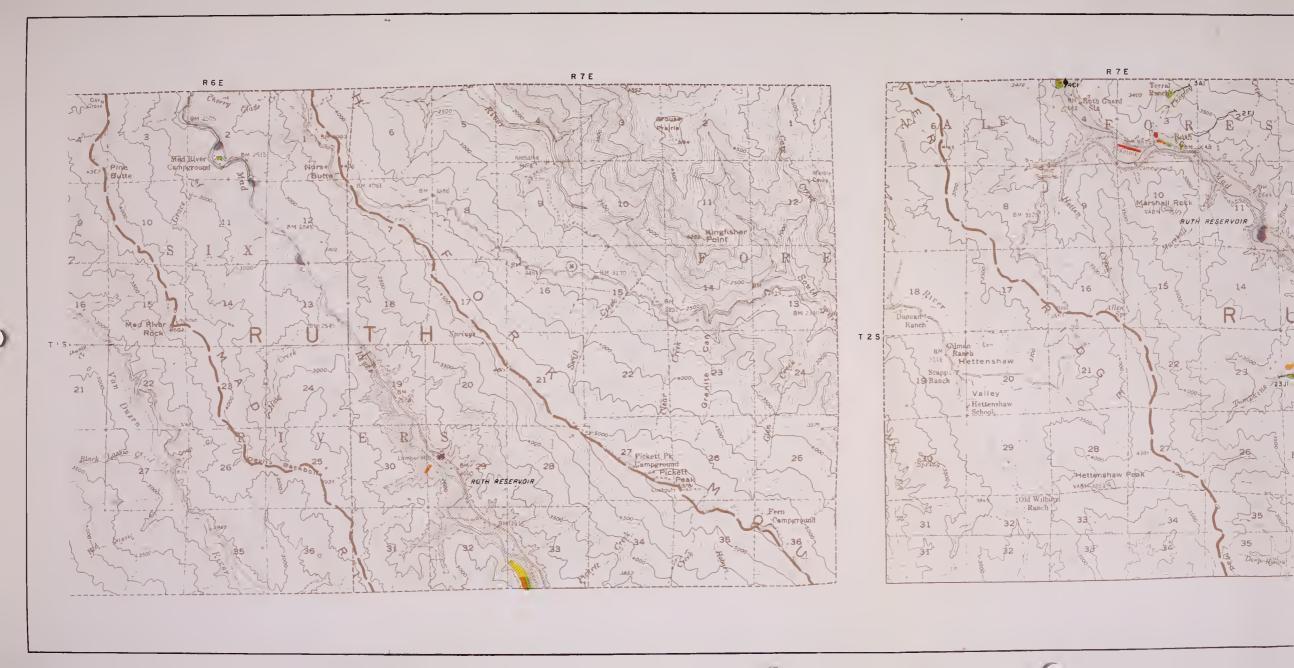
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NORTHERN BRANCH

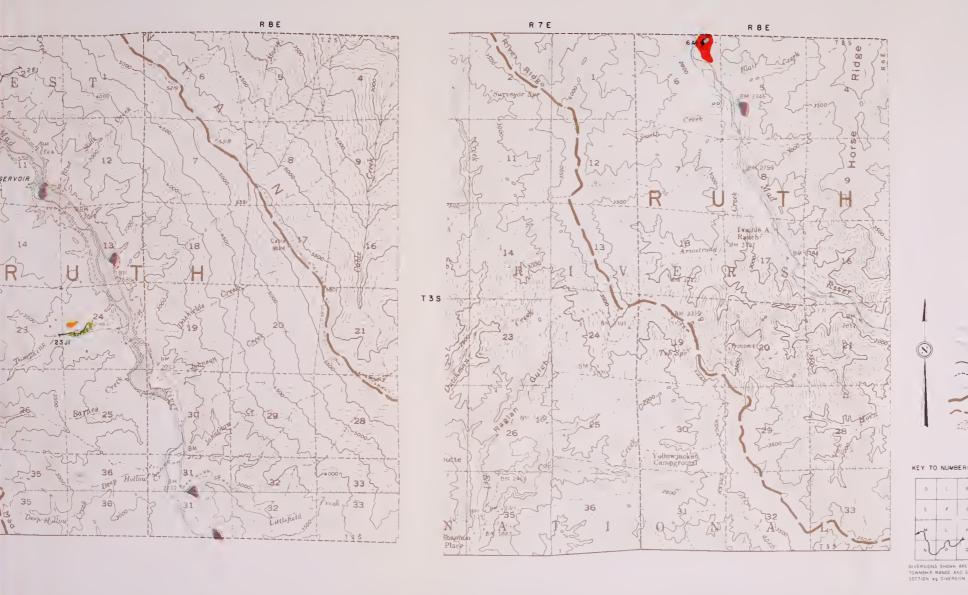
LAND AND WATER USE
MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

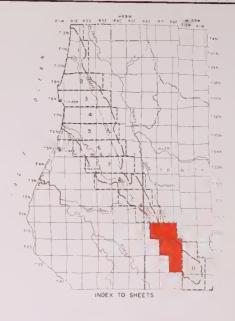
LAND AND WATER USE

T1-35,R6-8E 1958

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KEY TO NUMBERING SYSTEM



TOWNSHIP RANGE AND SUBDIVISON OF SECTION of DIVERSION 25/7E-2N1

STATE OF CALIFORNIA THE RESOURCES AGEN Y OF CALIFORNIA DEPARTMENT OF WATER RESOURCES NORTHERN BRANCH

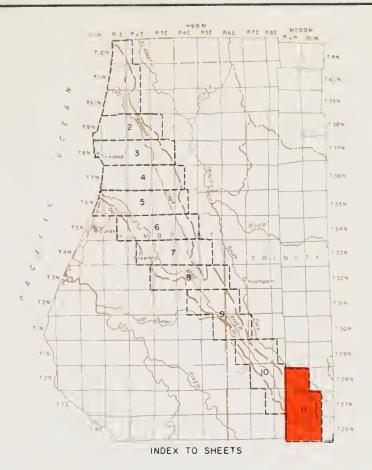
LAND AND WATER USE

MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

LAND AND WATER USE T1-35,R6-8E HB8M 1958

SCALE OF HEL







NONE LANDS RECEIVING FULL IRRIGATION

NONE LANDS RECEIVING PARTIAL IRRIGATION

NONE LANDS USUALLY IRRIGATED BUT IDLE OR FALLOW IN 1958

NONE NATURALLY IRRIGATED MEADOWLANDS

NONE DRY FARMED LANDS

NONE URBAN LANDS

NONE RECREATIONAL LANDS

# ) NUMBERING SYSTEM

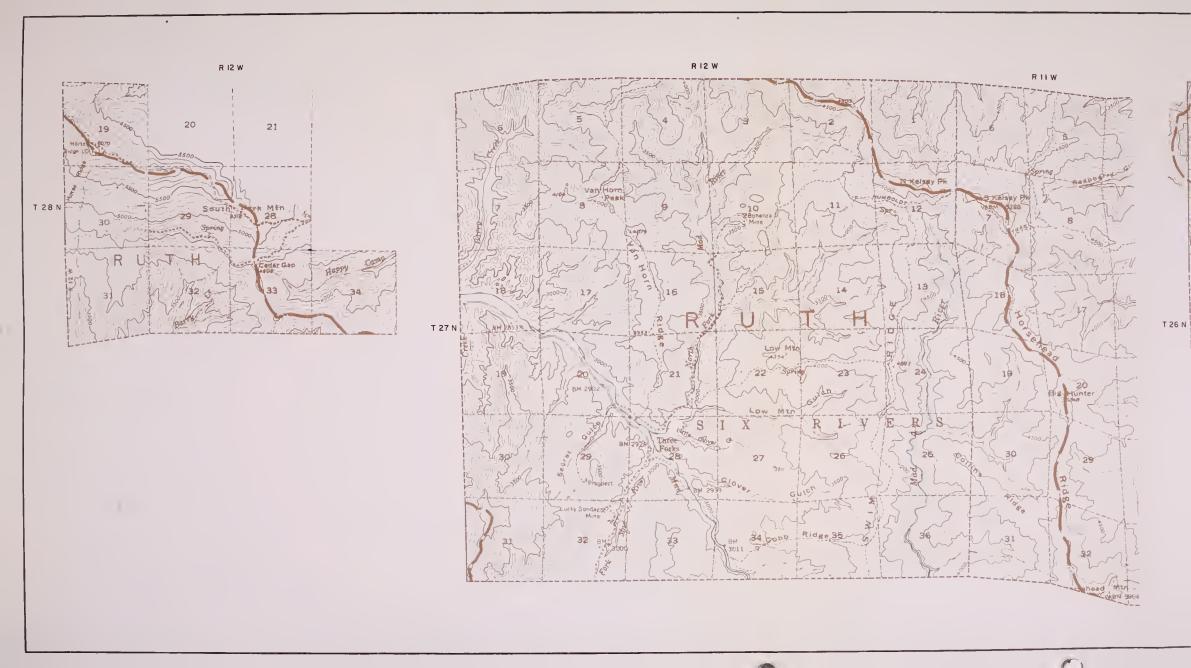


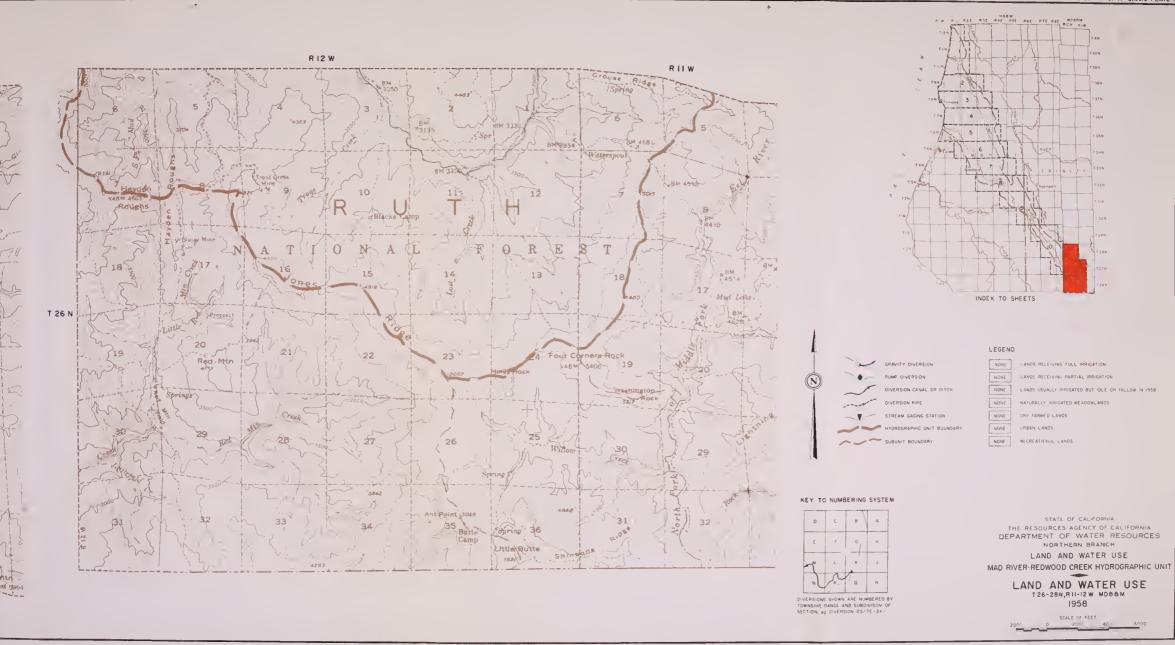
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LAND AND WATER USE T26-28N,R11-12 W MDB & M 1958

SCALE OF FEET
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DEPARTMENT OF WATER RESOURCES

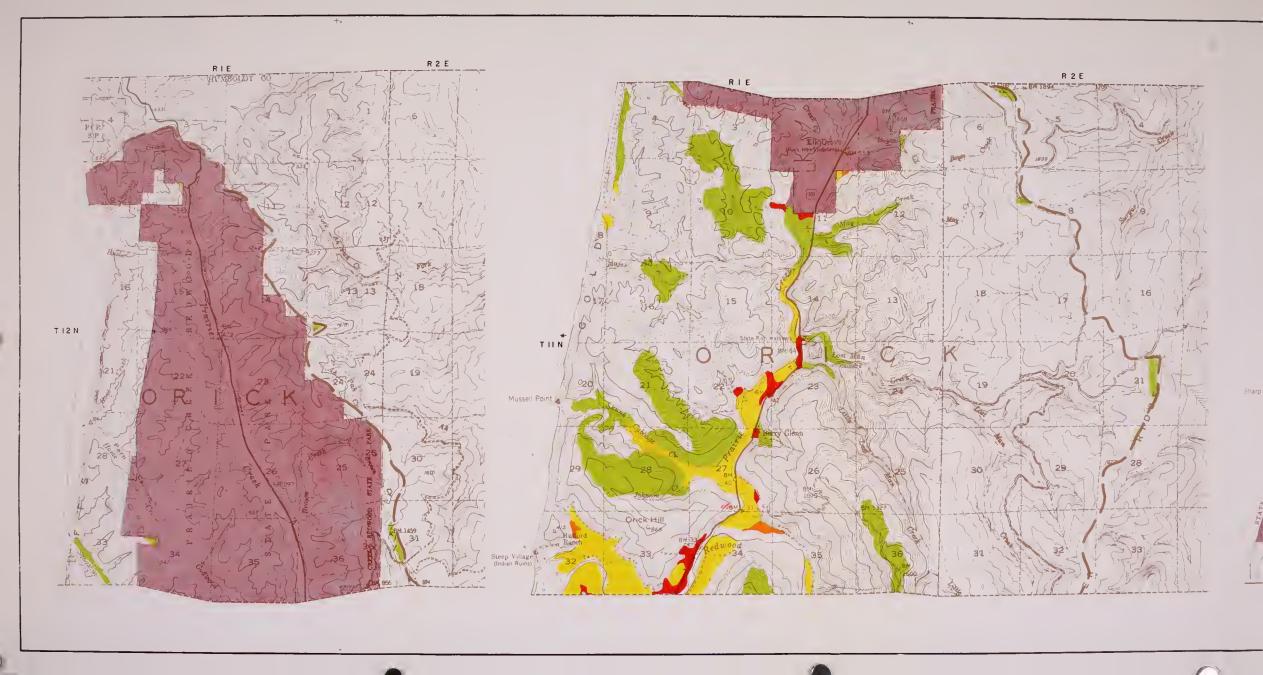
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CLASSIFICATION OF LANDS

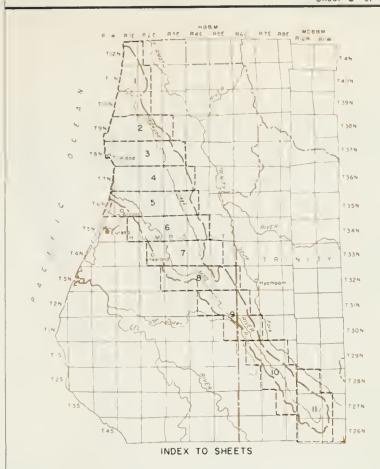
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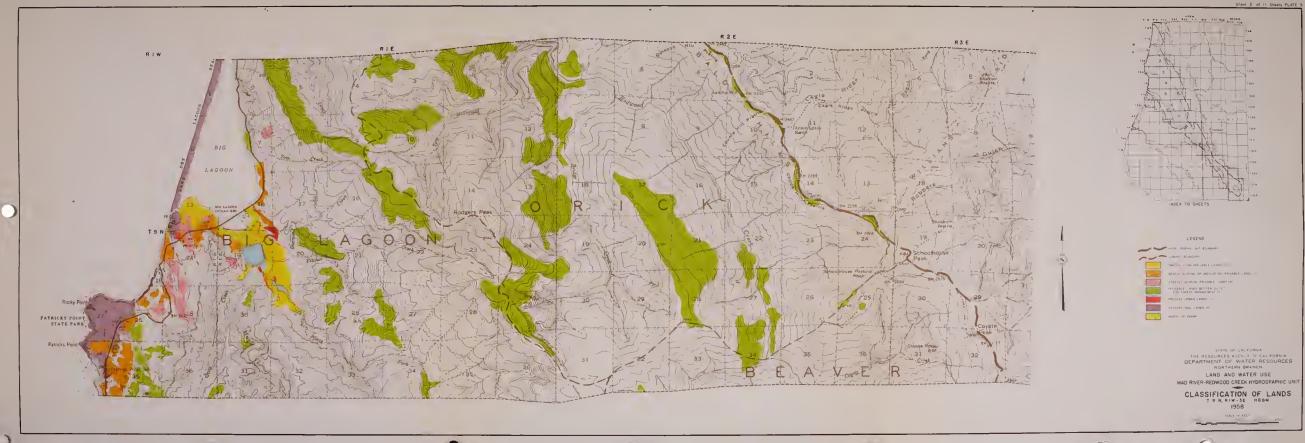
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DEPARTMENT OF WATER RESOURCES
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CLASSIFICATION OF LANDS
T 9 N, RIW-3E HBBM
1958

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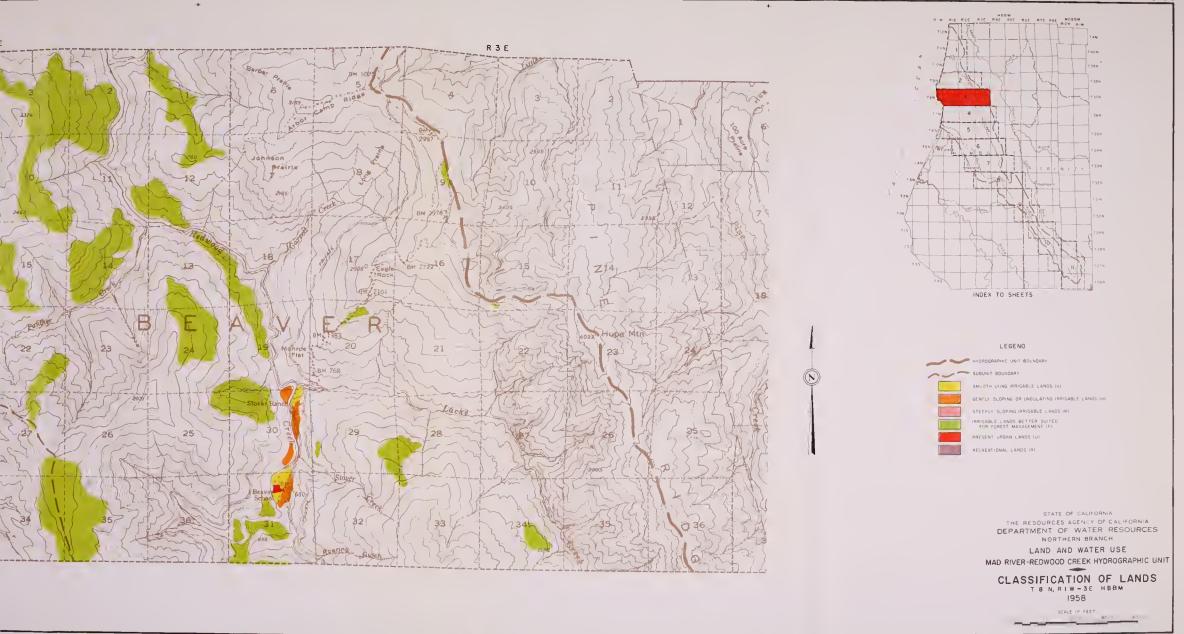


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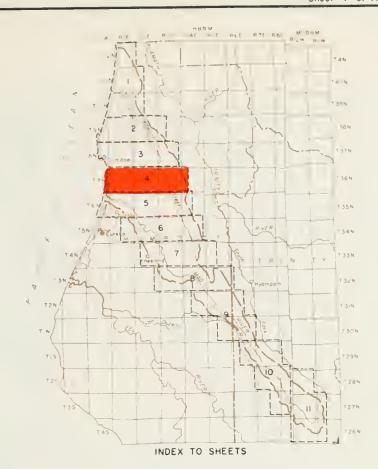
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CLASSIFICATION OF LANDS
T 8 N, RIW - 3E HBBM
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THE RESOURCES AGENCY OF CALIFORNIA

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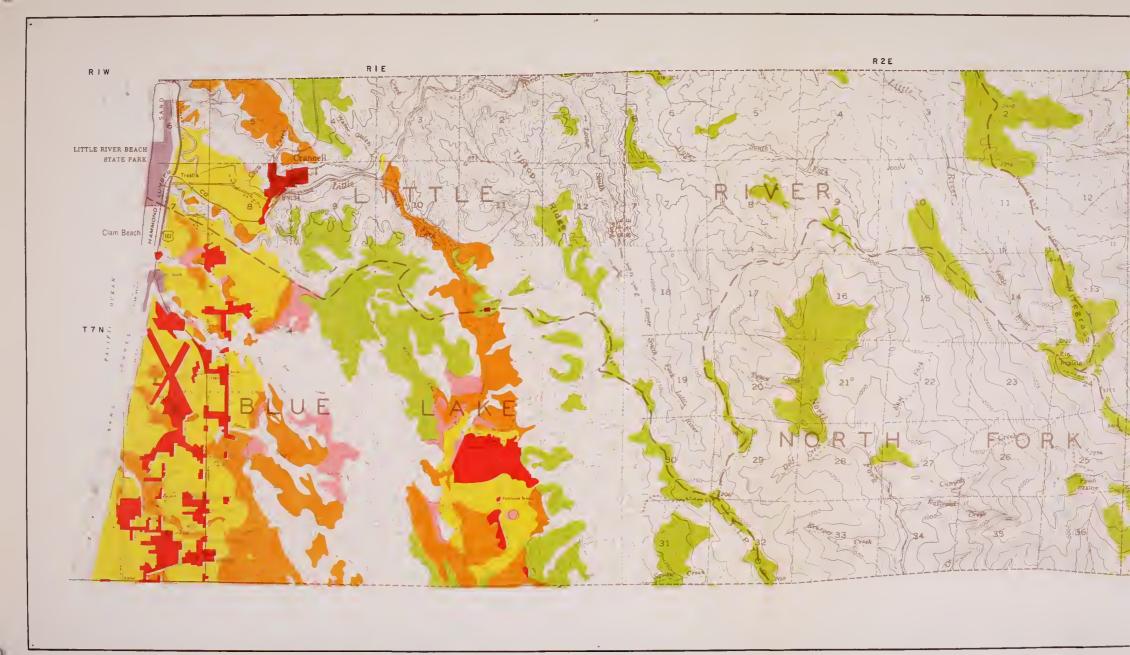
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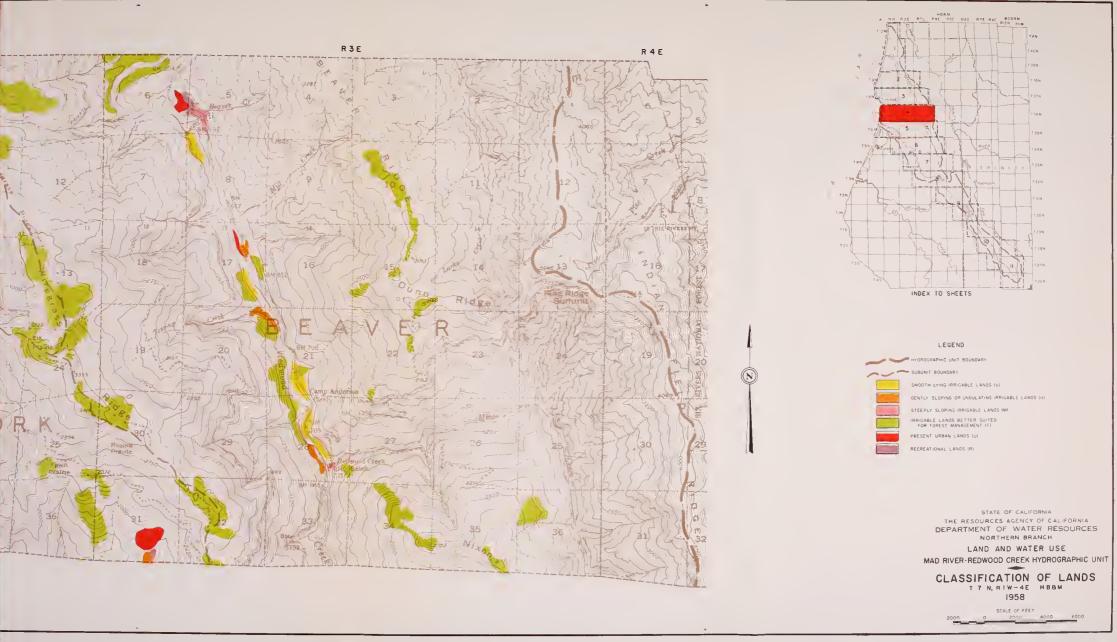
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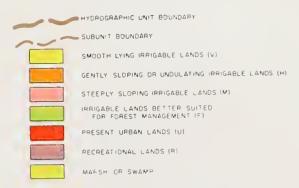
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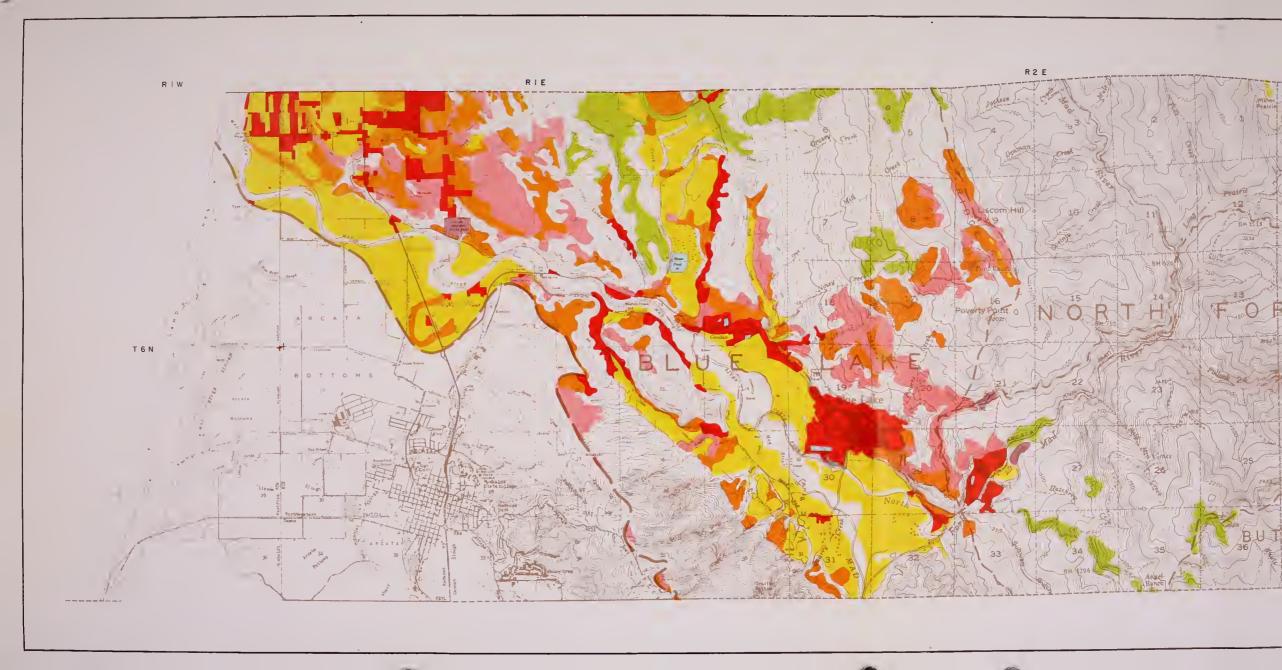
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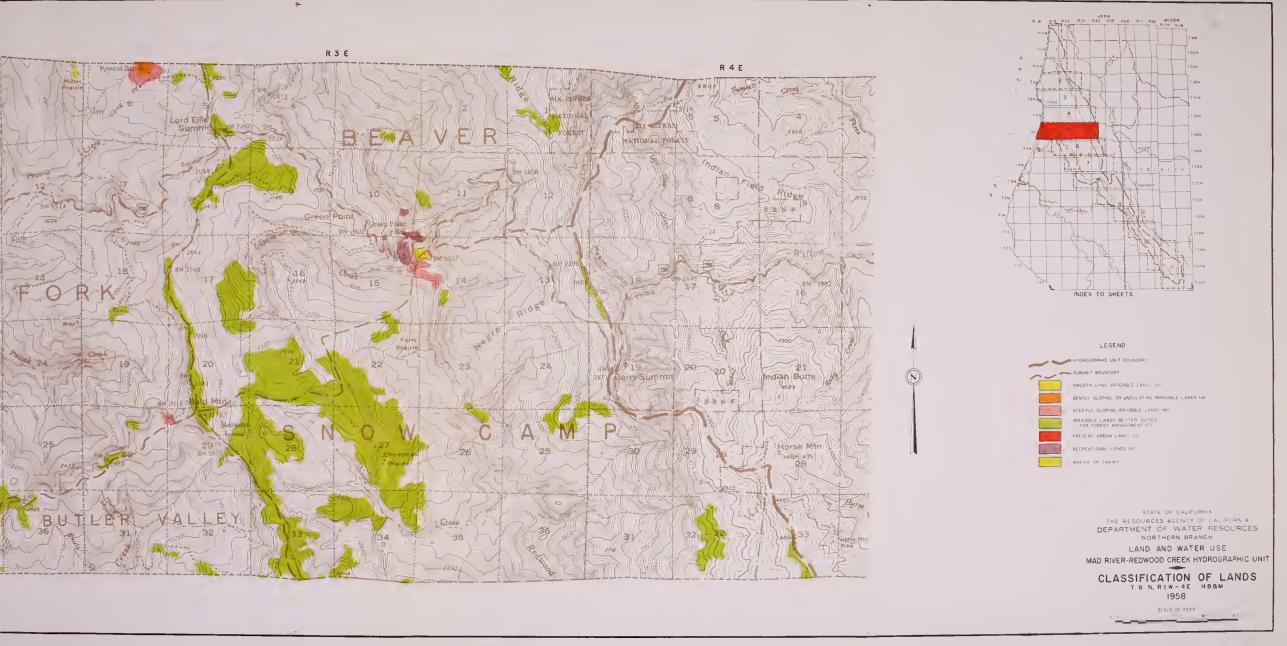
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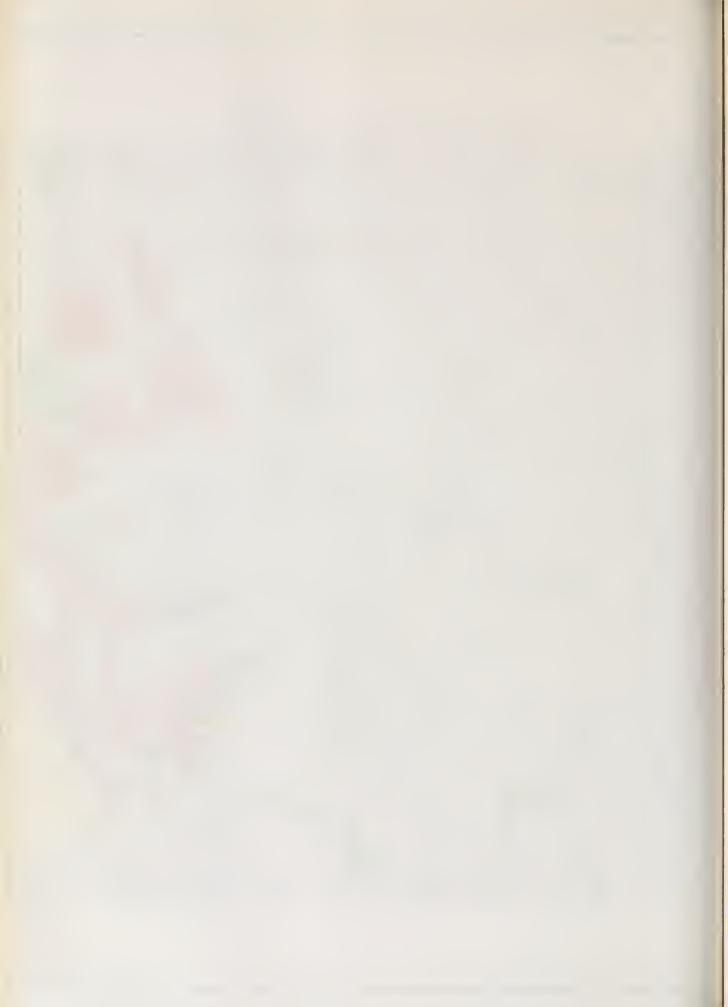
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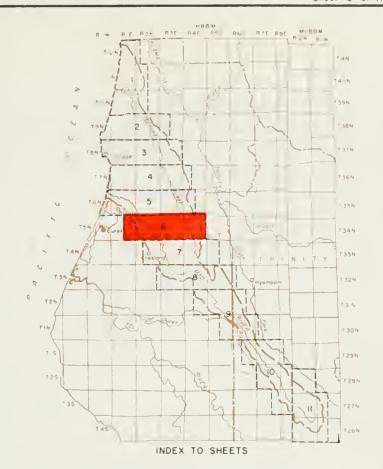
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T 6 N, RIW-4E HBBM
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SCALE OF FEET 2000 2000 6000











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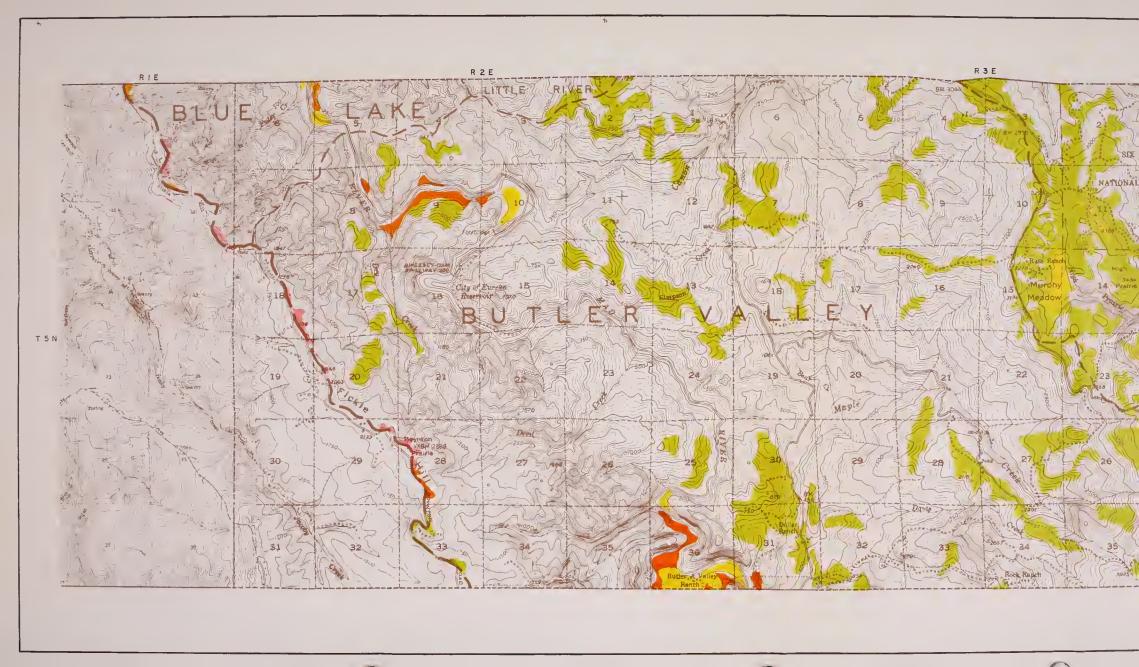
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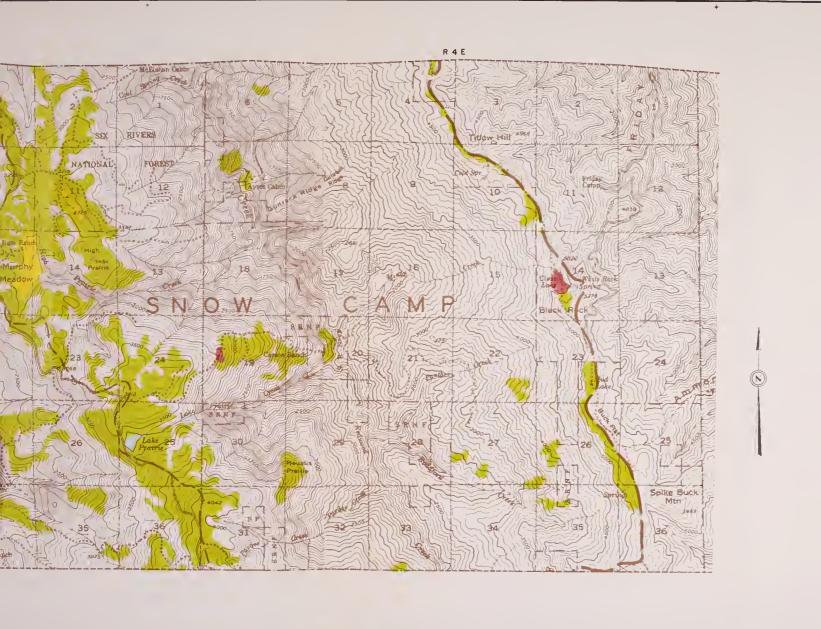
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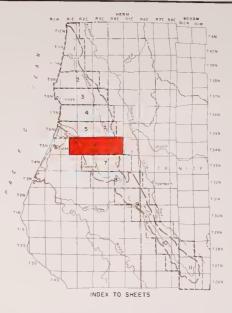
CLASSIFICATION OF LANDS

1958

SCALE OF FEET 0 2000 405 600







HYDROGRAPHIC UNIT BOUNDARY

SUBUNIT BOUNDARY

SMOOTH LYING IRRIGABLE LANDS (VI)

GENELY SLOPING IRRIGABLE LANDS (MI)

STEEPLY SLOPING IRRIGABLE LANDS (MI)

IRRIGABLE LANDS BETTER SUITED

FOR FOREST MARAGEMENT (FI)

NONE

PRESENT URBAN LANDS (VI)

RECREATIONAL LANDS (RI)

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NORTHERN BRANCH

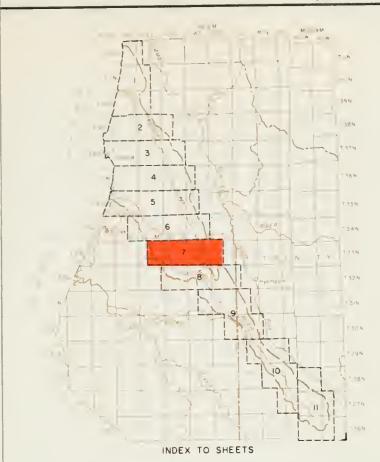
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MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

CLASSIFICATION OF LANDS

1958

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STATE OF CALIFORNIA
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DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

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MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

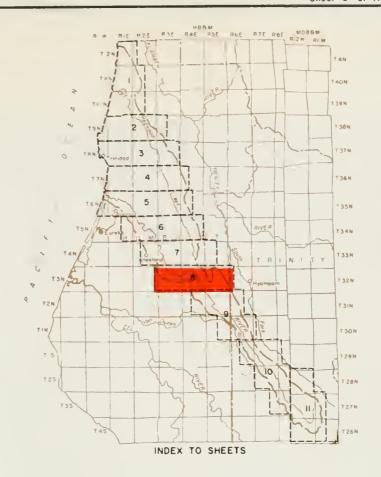
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DEPARTMENT OF WATER RESOURCES
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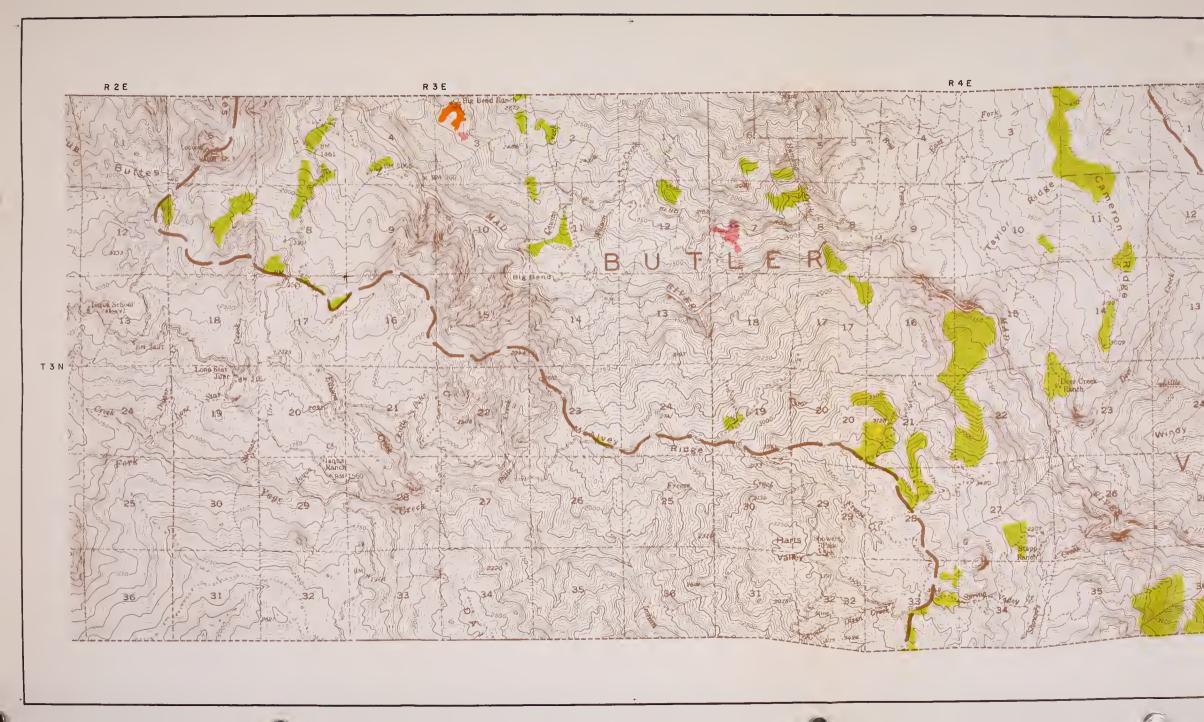
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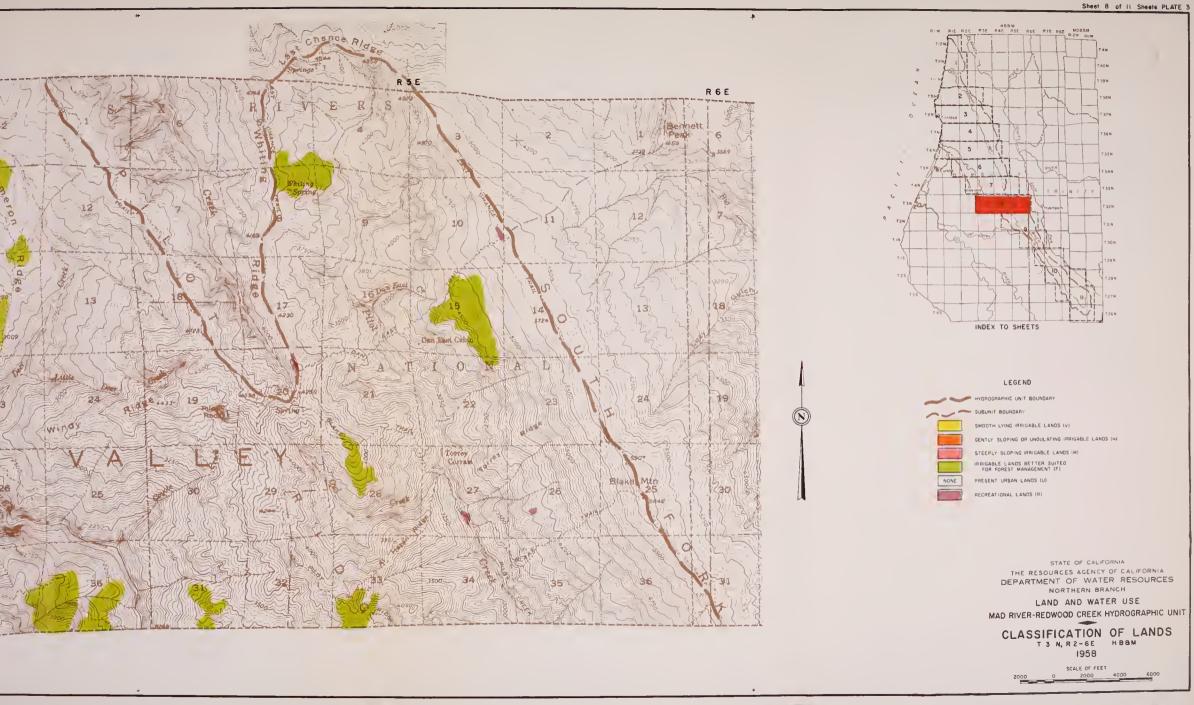
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CLASSIFICATION OF LANDS

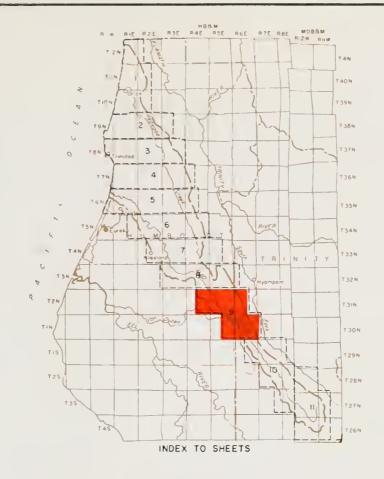
1958

SCALE OF FEET 2000 0 2000 4000 6000











HYDROGRAPHIC UNIT BOUNDARY

SUBUNIT BOUNDARY

SMOOTH LYING IRRIGABLE LANDS (V)

GENTLY SLOPING OR UNDULATING IRRIGABLE LANDS (H)

NONE STEERLY SLOPING IRRIGABLE LANDS (M)

IRRIGABLE LANDS BETTER SUITED
FOR FOREST MANAGEMENT (F)

NONE PRESENT URBAN LANDS (U)

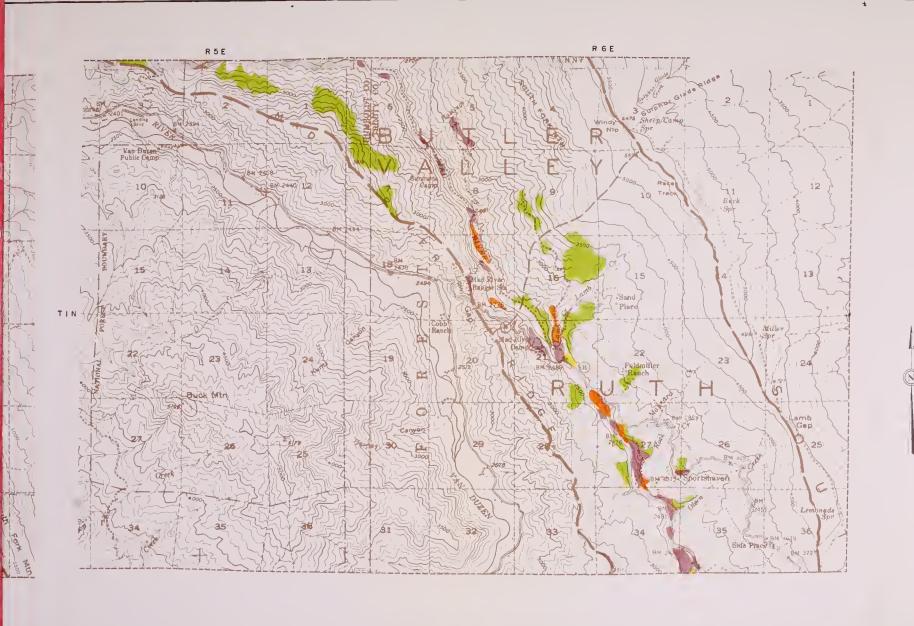
RECREATIONAL LANDS (P

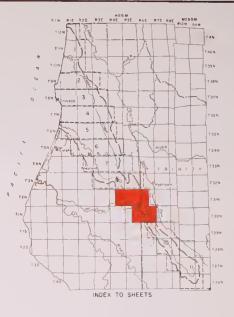
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THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
NORTHERN BRANCH

LAND AND WATER USE
MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

CLASSIFICATION OF LANDS TI-2N, R4-6E H89M 1958

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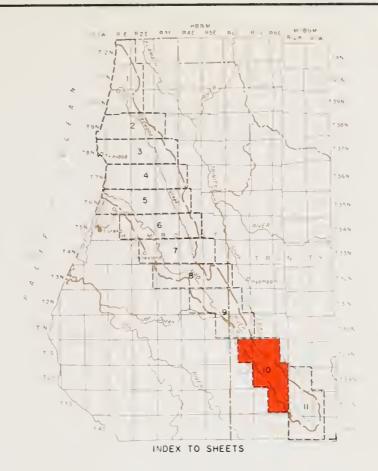
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CLASSIFICATION OF LANDS T1-2N, R4-6E H88M

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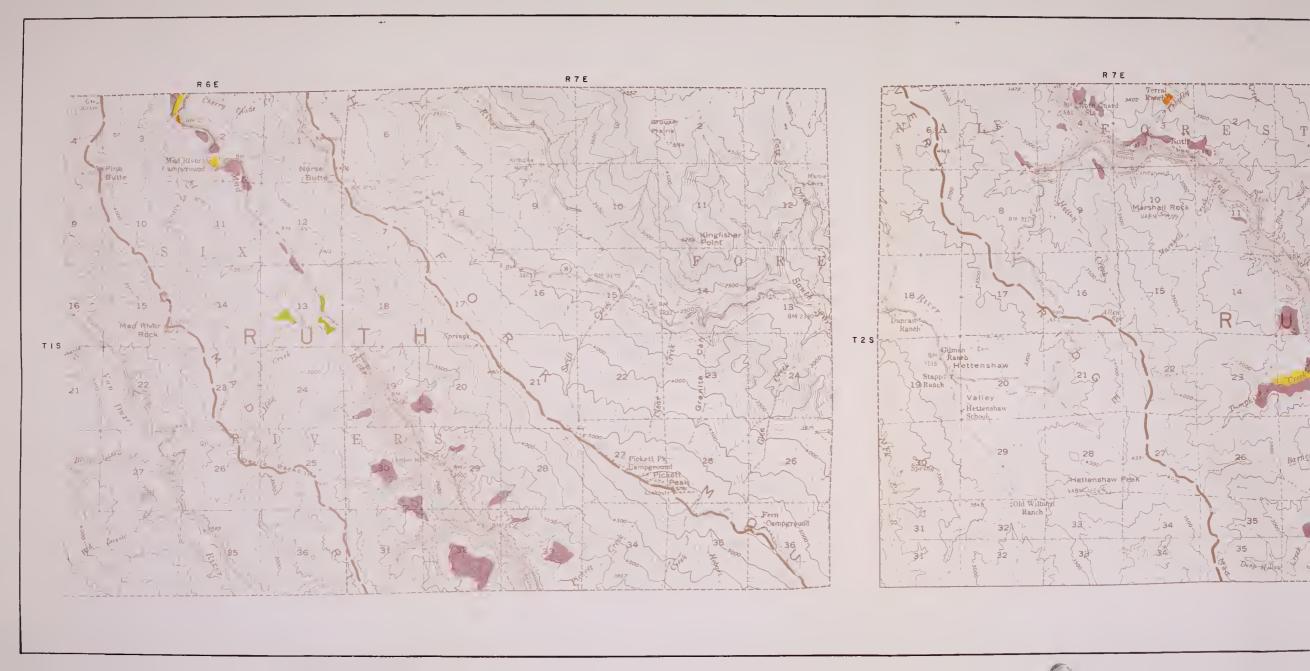
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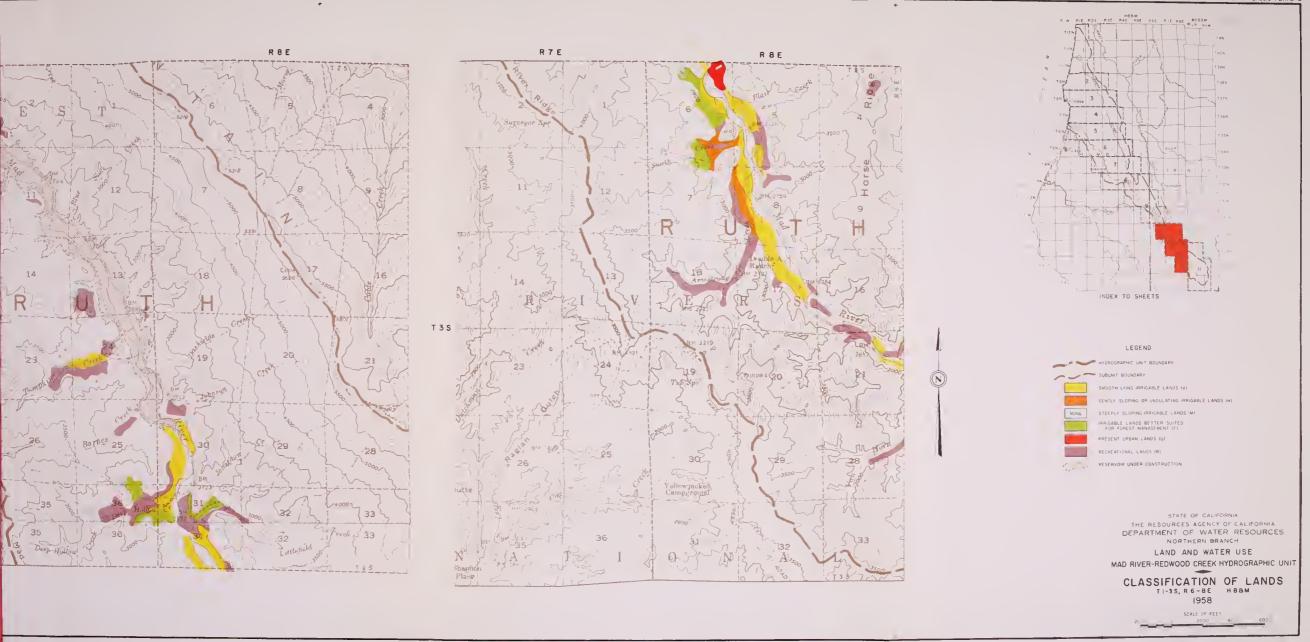
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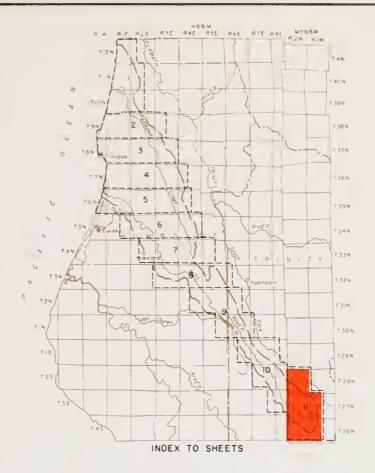
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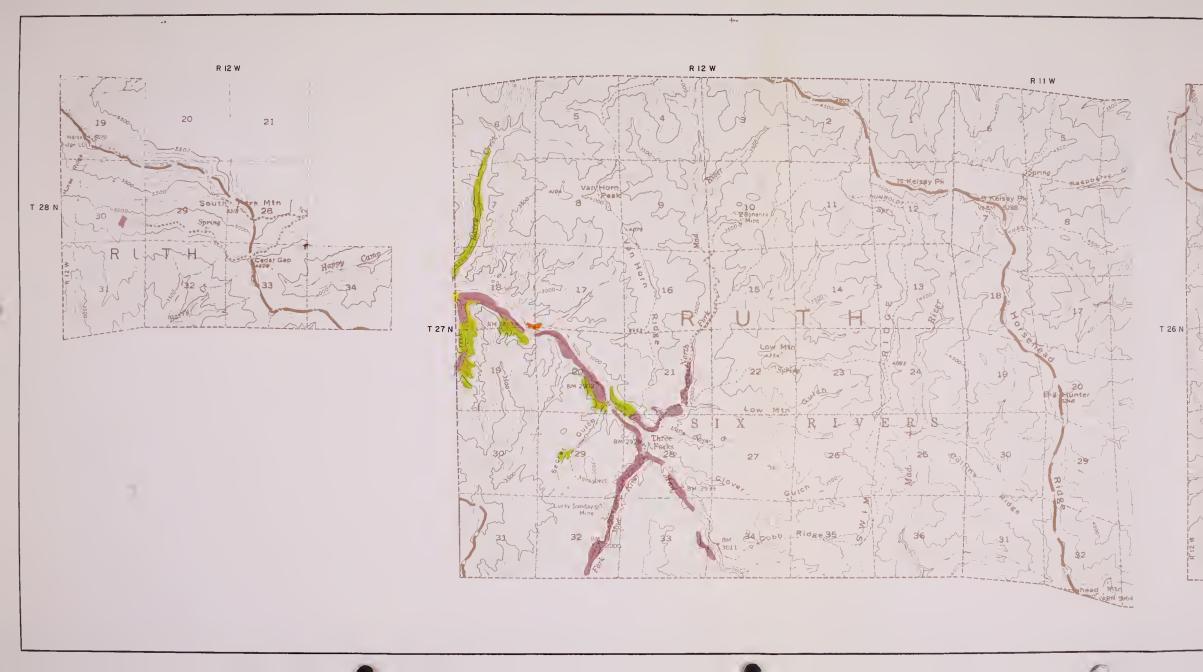
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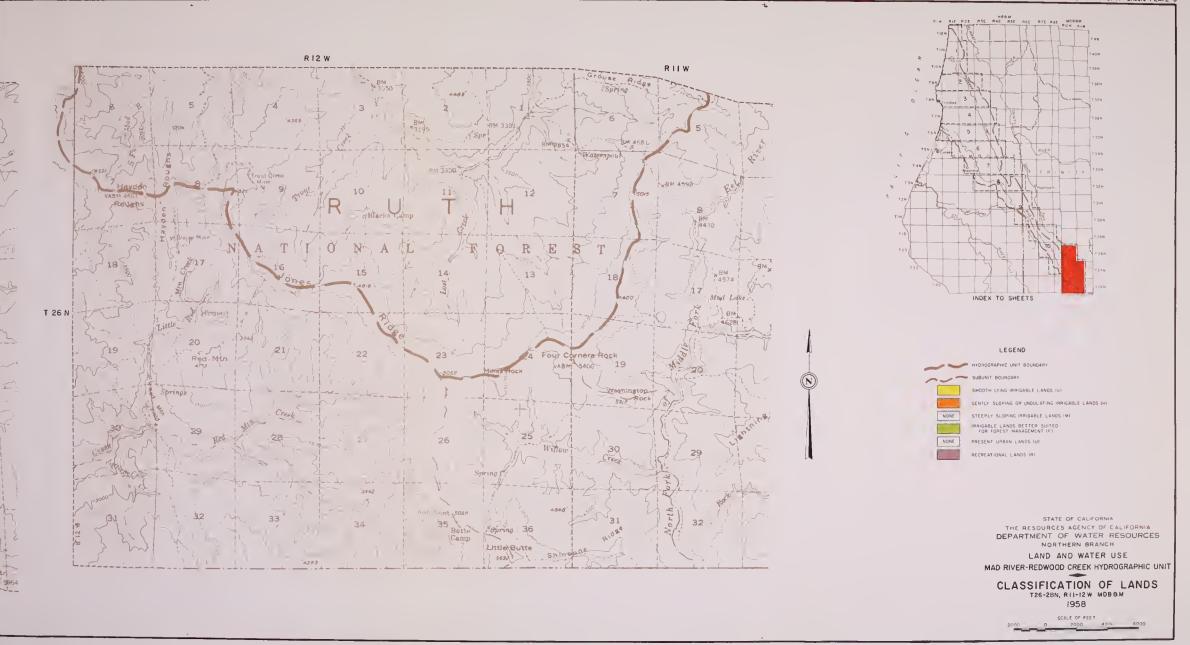
LAND AND WATER USE
MAD RIVER-REDWOOD CREEK HYDROGRAPHIC UNIT

CLASSIFICATION OF LANDS

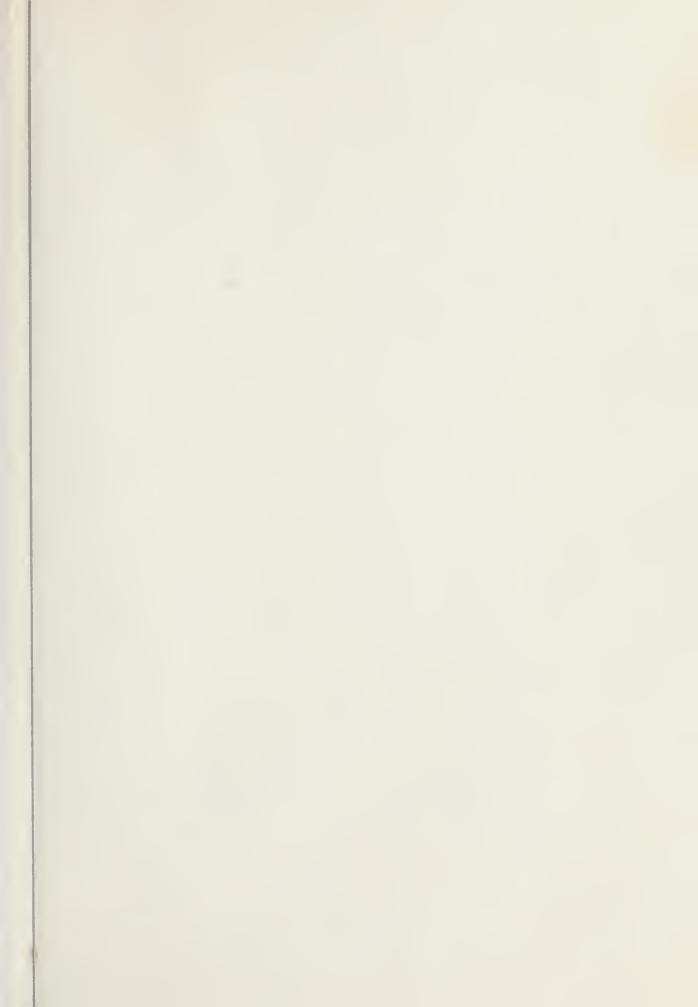
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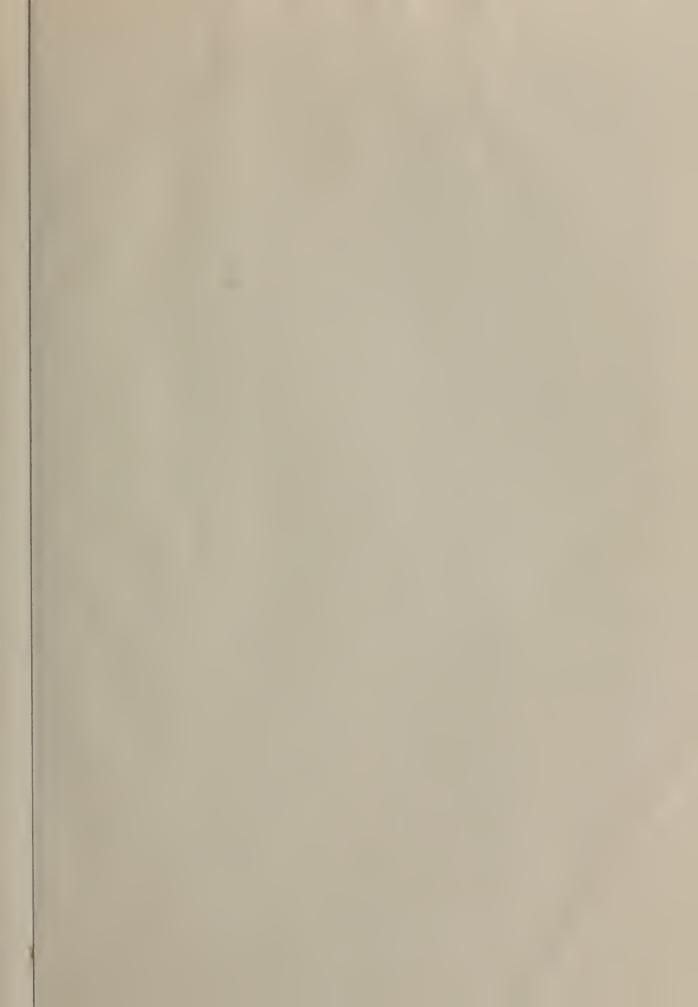












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